THE REVIEW

DEVOTED TO THE INTERESTS OF THE AMERICAN SOCIETY FOR STEEL TREATING

Volume 1 | Application for Second Class Entry Pending. | September, 1930 | No. 3

GOOD REGISTRATION SYSTEM IS PLANNED

Similar Cards, Badges Ready for Use by All Societies

The registration system for the twelfth annual National Metal Congress and Exposition has been designed to make registering as simple a matter as possible for members of the various societies which are participating in the Congress in Chicago the week of Sept. 22.

Members of the American Society for Steel Treating; American Society of Mechanical Engineers; American Institute of Mining and Metallurgical Engineers; and Gas Products Association will register together at the Stevens Hotel and similar badges will be issued to all. American Welding Society members will register at the Congress Hotel, that society's headquarters, but will receive the standard badges. Members of the International Railroad Master Blacksmiths' Association will register at their Morrison Hotel Headquarters.

This plan of joint registration was decided upon in a meeting of representatives of the several societies held in Atlantic City in June. Simplification of details and efficiency in operation is the purpose which the plan is expected to achieve.

One form of registration card will be used by all societies. Each member is requested to check the society or societies to which he belongs. If he is a member of more than one, copies of the card are made and forwarded to each so that every society will have a card for every member registering at the Congress.

STYLE SHOW LEADS LADIES' PROGRAM OF ENTERTAINMENT

Every Event Seems Enjoyable

Two luncheons, a style show and several other attractive entertainments have been planned for the ladies who will be in Chicago for the National Metal Congress and Exposition, Sept. 22-26. On Monday, the 22nd, the ladies will be guests at a luncheon at the Stevens Hotel. After luncheon they will visit the displays in the National Metal Exposition.

Tuesday brings an automobile tour of Chicago. The ladies will ride along 45 miles of the most interesting views which Chicago can offer—its parks, residential sections, the Loop, Wacker Drive and so forth. A bridge party at the Stevens is Wednesday's feature. Ladies who do not prefer bridge are invited to visit the Chicago Art Gallery, notable among those of the world.

The style show comes on Thursday. The plan calls for luncheon in the dining room of Marshall Field and Company. Then Marshall Field's most distinguished mannequins will show the latest modes to the assembled ladies and bring to a grand close the scheduled events of the ladies entertainment program.

GOLDEN GATE'S METALLURGY EVENING COURSE AGAIN OPEN

Lectures, Laboratory Work Given

The evening course in practical metallurgy, sponsored annually by the Golden Gate chapter, opened August 15 with the first of a series of 18 lectures on the subject. The Beginner's Laboratory course started on the 19th and the advanced laboratory course on the 20th.

S. R. Thurston, chemist for the Bethlehem Shipbuilding Corp., is chairman of the chapter's educational committee and one of the instructors of the course. George A. Nelson, metallurgist at the Shaw Laboratory, is the instructor.

The course of 18 lectures is open to everyone interested and no tuition fee is charged. Twenty men who have attended this course are then chosen to do the work in the beginner's laboratory. The number is limited by the accommodations of the Humboldt Evening High School, San Francisco, where the courses are given.

A. S. S. T. MAY USE NEW MIKE

Portable Microphone May be Developed by National Metal Congress Time

An innovation in convention amplifying systems may be introduced at the National Metal Congress in Chicago, if certain development work of the Columbia Broadcasting System is completed before then. A portable microphone is being perfected which can be strapped on the speaker's chest, permitting him to move about on the platform yet still be audible through the amplifying system.

An experimental two-button carbon microphone was built for the Columbia organization, but was not wholly successful according to E. K. Cohan, director of technical operations for the Columbia chain. Cohan wrote to the Society some months ago, however, that a chest type condenser microphone would soon be available.

If such a "mike" is available by the middle of September it will be used in connection with the amplifying system of the Hotel Stevens. The regulation aviator's chest microphone has neither the quality nor the sensitivity expected for such work.

WESTERN SHOW AND CONGRESS ON WAY

Present Signs Promise Fine Event for San Francisco

Contracts already signed for space in the National Western Metal and Machinery Exposition, to be held in San Francisco the week of February 16, 1931, presage a large and well-balanced exhibition. At the same time, plans for the National Western Metal Congress indicate that that event will be outstanding educationally in the western metals world. Congress headquarters will be the St. Francis Hotel in San Francisco.

Well over 70,000 square feet in the Civic Auditorium of San Francisco will be devoted to displays representing the production, fabrication, treatment, inspection, welding and assembly of many metals, ferrous and nonferrous. Tools and equipment for use in oil fields will be a feature of the exposition.

Twelve societies are co-operating to make the National Western Metal Congress successful. Besides the American Society for Steel Treating, these organizations will be represented in the Congress: American Chemical Society; American Institute of Electrical Engineers; American Institute of Mining and Metallurgical Engineers; American Petroleum Institute, California division; American Society of Mechanical Engineers; American Welding Society; Institute of Metals; National Purchasing Agents Association; Pacific

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On the other side of the Michigan Avenue bridge, shown above, are the famous Wrigley Building and Tribune Tower.

TECHNICAL SESSION CHAIRMEN NAMED FOR A.S.S.T. MEETINGS

Vice-Chairmen Also Announced

Dr. Albert Sauveur, professor of metallurgy and metallography at Harvard University, has been announced as chairman of the meeting of the American Society for Steel Treating in Chicago, Wednesday morning, Sept. 24, during the National Metal Congress. The annual Campbell Memorial Lecture will be given at this time by Dr. M. A. Grossmann, Republic Steel Corp., Massillon, O., who will discuss "Oxygen in Steel."

Others who have accepted chairmanships at the A. S. S. T. convention sessions are:

H. W. Gillett, director, Battelle Memorial Institute, Columbus, Ohio; H. J. French, International Nickel Co., Bayonne, N. J.; Donald G. Clark, director

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"METAL PROGRESS" TO ANSWER 20 QUESTIONS, EDITOR SAYS

Do you know which heats faster, an over-fired or an under-fired furnace? Could you find a crack beneath the surface of a casting ten inches thick? Do you know how to produce a good nitrided case in four hours? Do you know how the big Zeppelins are put together?

Ernest E. Thum, editor of *Metal Progress*, is wondering how many hundred members of the American Society for Steel Treating could say "yes" truthfully to those questions right now.

"Every article in *Metal Progress* for September is really an answer to a question," Thum said recently. "To answer the questions asked most frequently is the ideal of the publication.

"*Metal Progress* will carry a story on furnace design which will answer more than one question. It tells what effect the location of the burners has on the speed of heating; it discusses the efficiency of various kinds of refractories, and is undoubtedly a most informative and practical article on furnaces.

"Nitriding has won its spurs as a steel treatment, but it is slow and therefore expensive. *Metal Progress* will describe in September ways to speed up the process and cut down the cost. The source of this information also is a convention paper.

"A less practical but almost as frequent question is how the aluminum alloy frame of a Zeppelin is fabricated without welding and without hammering. A staff writer for *Metal Progress* went to Akron and watched the construction of the Navy's new dirigible which will be the largest in the world.

"More than one expert tool hardener right now is wondering how he can prevent grinding cracks. *Metal Progress* will tell him, briefly, simply, but expertly. One of the authors on the National Metal Congress program found a way to avoid them, and his paper has been abstracted.

"Certainly many have wondered if X-rays are more penetrating than any other rays. The answer is negative. A paper on the Chicago Convention program describes the radiographic properties of radium rays, and from it *Metal Progress* has made an interesting and informative summary of radium ray picture taking.

More than three or four questions are answered in the publication, according to Thum. About twenty articles will be included in the editorial pages, not counting several monthly departments and features, and each of the articles, it is hoped, will be the answer to a metal man's prayer.

A review of the past year's study of

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NATIONAL METAL CONGRESS AND EXPOSITION WILL BE OUTSTANDING IN WORLD OF METALS

Seventy-Five Thousand Business and Technical Leaders in Ferrous and Nonferrous Industries Will Attend

Five days are annually marked in red on the metal world's calendar, the days of the National Metal Congress and Exposition, which this year will be held in Chicago the week of Sept. 22. Thousands will gather to hear illuminating reports of the latest advances in the knowledge of metals; fully seventy-five thousand leaders in the business and science of metals will thoughtfully examine displays of their industry's tools and products.

To be outstanding in the educational events of the industry they serve is the realized aim of the Congress and Exposition.

This year for the first time it has been possible to have both the exposition and the technical sessions under one roof. The Stevens Hotel in Chicago, the largest in the world, provides ample and attractive accommodations for the displays, has plenty of rooms for meetings, and can house comfortably the thousands of metal men who will be in Chicago for the occasion.

The National Metal Congress and Exposition is sponsored every year by the American Society for Steel Treating, which holds its convention and annual meeting as part of the Congress program. Cooperating to make the Congress successful will be the Iron and Steel and the Institute of Metals divisions of the American Institute of Mining and Metallurgical Engineers, the Iron and Steel and Machine Shop Practice divisions of the American Society of Mechanical Engineers, the American Welding Society, the International Railroad Master Blacksmiths' Association and the Gas Products Association.

Headquarters for the American Society for Steel Treating, the American Institute of Mining and Metallurgical Engineers, the American Society for Mechanical Engineers and the Gas Products Association will be at the Hotel Stevens. The American Welding Society will have headquarters at the Congress Hotel and will hold its sessions there also. The Master Blacksmiths' Association has chosen the Hotel Morrison for its headquarters.

The National Metal Exposition, of keen interest not only to members of these societies, but to all men in metal industries, will be held in the exhibition hall, grand ball room, main dining room, lounge and foyers of the Stevens. Seventy thousand square feet of space will be given over to an all-inclusive exhibition of the products of 175 companies connected in various ways with the manufacture, treatment or fabrication of iron, steel and nonferrous metals. A list of the exhibiting concerns, together with a description of their displays, is printed elsewhere in THE REVIEW.

The National Metal Exposition in Chicago, September 22-26, will observe the following hours for opening and closing:

Monday ....10 A. M. to 6 P. M.
Tuesday ....12 Noon to 10 P. M.
Wednesday ..10 A. M. to 6. P. M.
Thursday ...10 A. M. to 6 P. M.
Friday ....12 Noon to 10 P. M.

Each of the societies meeting as part of the Congress sponsors its own program of sessions for the presentation of technical papers. The complete programs are also printed in this issue, and included therein are papers of vital interest to users of metal everywhere, prepared and presented by leaders in technical fields.

Approximately 15,000 are expected to go to Chicago for the Congress and Exposition from other important centers of the metal world. For convenience in making room reservations at the Hotel Stevens, a reservation blank is printed on another page. The early use of this blank will insure a good room which will meet all requirments.

METALS HANDBOOKS AVAILABLE TO SENIOR CLASSES IN METAL

Action Taken by Directors

Senior students studying metallurgy at accredited schools and colleges of engineering may use copies of the *National Metals Handbook*, 1930 edition, to aid them in the work.

Recent action of the directors of the Society authorized W. H. Eisenman, secretary, to inform engineering institutions that the American Society for Steel Treating would furnish them *Handbooks*, upon request, to lend to senior students for use as a text or reference book. The Society will be protected against lost or damaged books by suitable deposits.

It was felt by the Board of Directors that even the very low cost of a junior membership in the Society ($2.50, including subscriptions to *Metal Progress* and THE REVIEW and option to purchase the current edition of the *National Metals Handbook* for $2.50) limited the educating influence of the American Society for Steel Treating among men who would some day become leaders in the world of metals. The directors believe that the Society will now prove helpful to even a greater number.

A.S.S.T. HAS TENTH BIRTHDAY, SEPT. 14

Formed in 1920 from Union of Two Technical Societies

The American Society for Steel Treating celebrates its tenth birthday on September 14, 1930. On the same date in 1920 the Steel Treating Research Society and the American Steel Treaters' Society merged, the name of each of these organizations contributing two of the four words in the name, American Society for Steel Treating.

The Steel Treating Research Society had been organized in Detroit in 1914 to awaken interest in the then young craft of heat treating and to broadcast knowledge of the subject. The American Steel Treaters' Society was composed originally of a number of Chicago metallurgists who had similar aims. By 1920 both organizations had several chapters and it was felt by many that since the purposes of each society were identical, the science of metallurgy could be better served by one large organization rather than two smaller ones.

The initiative in the amalgamation was taken by Lieutenant-Colonel A. E. White, professor of chemical engineering at the University of Michigan, who was a member of both societies. A poll of all members was taken and on February 27, 1920, it was announced that 828 had voted in favor of the amalgamation and 34 against. And so it was that in Philadelphia, at a combined convention of both societies, the plans were ratified and the American Society for Steel Treating was formed with a total of 1700 members. Now, only ten years later, the membership is larger than 6000.

The late Arthur G. Henry, a founder member of the American Society for

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VANADIUM CORP. PROMOTES GIBBONS

P. J. Gibbons, formerly assistant secretary and treasurer of Vanadium Corporation of America, 120 Broadway, New York, has been elected secretary and treasurer of the Corporation, succeeding Nils Falk, deceased.

THE REVIEW

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A Review of the Activities of the Chapters and National Organization of the A. S. S. T.

Published monthly by the
AMERICAN SOCIETY *for* STEEL TREATING
7016 Euclid Ave., Cleveland, O.

Subscription $.60 a year; 5 cents a copy.

RAY T. BAYLESS ..... *Editor*
JOHN G. MAPES ..... *Managing Editor*

Volume I **Cleveland, O., September, 1930** **No. 3**

THE CONGRESS CALLS YOU ALL

Is your work technical? If so, the tentative list of papers to be presented by their authors at the Chicago Convention next September will convince you of the unusually fine programs scheduled.

Are you concerned primarily with sales? Then you already recognize the near-necessity of being present at the year's greatest meeting ground for metal industry executives. The sales session this year is an added incentive to attend.

Are you a general executive? Then you know from past history how important National Metal Week is on the calendar of progressive men whose business is concerned with iron, steel or non-ferrous metals.

Are you a shop executive? Experience has shown you the importance of examining the latest equipment and comparing facts with men in other lines. The list of exhibitors printed in another column will be even longer when the show opens.

Are you in any way interested in the manufacture or fabrication of metals? The technical sessions, the exposition and the personal contacts you can make there will widen your interest and increase your knowledge.

Prepare now to be in Chicago for the National Metal Congress and Exposition—September 22-26. It will pay you.

MEASURABLE PROFITS FROM THE CONGRESS

The week of September 22, 1930, is important to the metal industries. How do we know? Because metal manufacturing and sales organizations will spend hundreds of thousands of dollars then, just because that week brings the National Metal Congress and Exposition to Chicago.

Both concrete and intangible benefits accrue from the expense of sending men and products to the Congress and Exposition. Exhibits get measurable results from actual orders and from a larger but more closely knit list of prospects. But those concerns which send representatives to draw profit from the technical sessions and inspect the display of new products and equipment cannot count in dollars the interest on their investment in fares, and general expenses.

The suggestion comes to this office that every representative submit to his company a complete report on his return from the Congress and Exposition. Such reports are already required by certain companies, and should be by all. If they are written while the events are still fresh in the mind, the helpfulness of the show and technical sessions will be extended beyond one or two men, and very definite results can be measured.

INTRODUCE YOURSELF

"A plant technician, an executive and a teacher think differently. How can I answer questions about my product unless I know who is asking them?"

An annual exhibitor at National Metal Expositions is asking this question. Our answer to his question is, "Find out." Our advice to everyone who plans to look over the Exposition is, "Let exhibitors know who and what you are so that they can tell you the facts which you, as a chemist, sales manager, purchasing agent, professor or metallurgist, want to know."

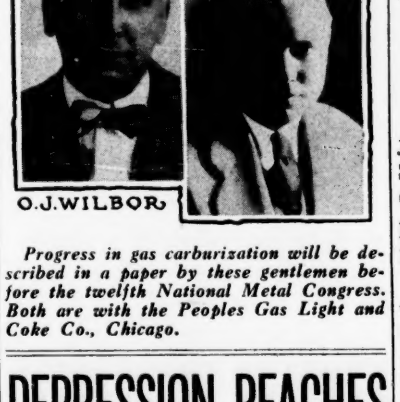
Don't hesitate to introduce yourself and ask questions. Everybody benefits from mutual understanding.

MAKE BUSINESS READING WIDE AND WISE

It seems trite to say that one man cannot hold every job in his business organization. It is equally well known that unless a man knows something of every phase of his business he will not get very far in it. These two statements are not irreconcilable.

The recommendation of many executives to men who want to advance is "read more wisely and more widely about your business". Many firms go so far as to employ a professional digester of books and magazines to skim the cream and prepare a brief summary of the main idea in each book or article. This summary is then made available to those who are progressive enough to make time for educating reading. If this plan seems impractical, remember that it would be unnecesary if there were not so many men who "haven't time to read" the material which would help them and their employers.

ON A.S.S.T. PROGRAM



Progress in gas carburization will be described in a paper by these gentlemen before the twelfth National Metal Congress. Both are with the Peoples Gas Light and Coke Co., Chicago.

DEPRESSION REACHES EUROPEAN BUSINESS

U. S. Executive Finds Uneasy Attitude Towards Future

Major Aaron E. Carpenter, first vice-president of E. F. Houghton & Co., Philadelphia, has just returned from an extended business survey in France, Germany, Poland, Russia and England. When asked how he found business conditions in Europe, Major Carpenter stated, that, on the whole, business was only fair, inclining to poor in some sections.

"In France, business conditions are quite fair, with little or no unemployment. However, a considerable amount of pessimism is shown in regard to the probable effect on French exports of the new American tariff bill."

German Trade Poor

In Germany, Major Carpenter found conditions considerably worse than on his previous business trips in 1928 and 1929.

"Last year's big metal strike, while settled in December, affected industry to such an extent that its ill effects are still in evidence on all sides. Then, too, the present industrial depression has now reached Germany with the result that there is considerable unemployment.

"There seems to be a decided lack of confidence on the part of German manufacturers and industrial leaders in the present socialistic government. This does not promise rapid re-stabilization of German industries."

Russian Industries Booming

"Russian industry has made some great strides in the last couple of years," reports Major Carpenter. He stated that, while he left Russia less of a Bolshevik than when he entered, nevertheless, the present government is very progressive and deserves much credit for the constructive work it is doing. He said further that the "Five-Year Program" is well ahead of schedule, and general conditions are really much better than one would infer from American newspapers.

"With few exceptions, Russia has done much to stabilize her industries, develop new ones, and gain the confidence of all nations. Within the country itself, there seems to be an air of satisfaction and confidence in the present form of government and the work it is doing. Improved living conditions have done much in this respect.

"Part of Russia's major activities, includes the building of hotels, apartment houses and private dwellings, as well as industrial plants. These activities are pretty well spread all over the country."

Major Carpenter was very well pleased with the travelling conditions in Russia, and recommends that all Americans going abroad this year visit that country. "Contrary to general belief, hotel accommodations are good, and there is plenty of good food.

British Conditions Uncertain

"Considering the many problems which England has to face, business conditions in Great Britain can best be labelled as 'uncertain,'" states Major Carpenter. "There is a terrific amount of unemployment in England, but, at the same time, business conditions, and production in particular, seem to be better than in the States. The unemployment situation probably never will be remedied, as England is over-mechanized and over-peopled. The dole seems to be doing much to keep the country on a stable level and has saved the country from serious complications.

"As in Germany, a great deal of uncertainty prevails in England. High taxes are the source of much dissatisfaction. These appear to be decidedly higher than in either France or Germany.

"Hotel and restaurant prices in England are far in excess of anything on the Continent, and railway fares also are quite high. Clothing prices, however, seem to be very reasonable."

38 PAPERS LISTED ON A.S.S.T. PROGRAM AT NATIONAL METAL CONGRESS IN SEPTEMBER

Program Covers Unusually Wide Range of Topics and Is Aimed to Interest and Instruct Metal Men

Thirty-eight papers, covering an unusually wide range of subjects, will be presented at the technical sessions of the American Society for Steel Treating at the twelfth annual National Metal Congress and Exposition. Thirty-three of these papers have been preprinted and are available to members of the Society. Those marked with an asterisk have not been reprinted.

All A. S. S. T. sessions will be held in the North Ballroom of the Hotel Stevens, official Congress headquarters. A modern amplifying system will assure that every person in the audience will miss no detail of the presentation of the papers.

The complete program lists these papers:

Monday Morning, Sept. 22

Corrosion and Heat Resistant Nickel-Copper-Chromium Cast Iron—J. S. Vanick and P. D. Merica, International Nickel Co., New York.

Fatigue Tests of Small Specimens with Reference to Size Effect—R. E. Peterson, Westinghouse Electric & Mfg. Co., East Pittsburgh.

Physical Properties of Fine Bolts—H. B. Pulsifer, Ferry Cap & Set Screw Co., Cleveland.

Electrolytic Decomposition of Cementite and Austenite—H. A. Schwartz, G. M. Guiler and H. H. Johnson, National Malleable & Steel Castings Co., Cleveland.

Monday Afternoon, Sept. 22

Stresses and Cracks in Hardened and Ground Steel—G. R. Brophy, General Electric Co., Schenectady.

**Cemented Tungsten Carbide*—Gregory J. Comstock, Firth-Sterling Steel Co., McKeesport, Pa.

Estimation of Internal Stress in Quenched Hollow Cylinders of Carbon Tool Steel—O. V. Greene, Carpenter Steel Co., Reading, Pa.

Cold Heading Die Life—A. S. Jameson, Internationl Harvester Co., Chicago.

Effects of Prequenched Treatments on the Hardness, Body and Structure of Hardened Tool Steel—R. H. Harrington, General Electric Co., Schenectady.

Tuesday Morning, Sept. 23

Sales Session

Tuesday Afternoon, Sept. 23

Forging Practice, U. S. Naval Gun Factory—S. L. Blankenship, Naval Gun Factory, Washington, D. C.

Heat Treatment Furnaces Used in Manufacture of Telephone Equipment—W. A. Timm, Western Electric Co., Chicago.

Scaling of Steel at Forging Temperatures—W. E. Jominy and D. W. Murphy, University of Michigan, Ann Arbor.

Copper Brazing in Hydrogen Electric Furnaces—H. J. Webber, General Electric Co., Schenectady.

Wednesday Morning, Sept. 24

Campbell Memorial Lecture

**Oxygen in Steel*—Dr. Marcus A. Grossmann, Republic Steel Corp., Canton.

Wednesday Afternoon, Sept. 24

Radiography by the Use of Gamma Rays—R. F. Mehl, Naval Research Laboratories, Washington, D. C., G. E. Doan and C. S. Barrett.

Critical Ranges in Pure Iron-Carbon Alloys—R. H. Harrington, General Electric Co., and W. P. Wood, University of Michigan, Ann Arbor, Mich.

Relationship Between Welded-On Overlays and Heat Treatment—Miles C. Smith, Stoody Co., Whittier, Calif.

Tungsten Carbon System—W. P. Sykes, General Electric Co., Cleveland.

Concentrated Pressure and its Applications to the Rolling Process—Dr. A. Nadai, Westinghouse Electric & Mfg. Co., East Pittsburgh.

Thursday Morning, Sept. 25

Influence of Nickel on the Chromium-Iron-Carbon Constitutional Diagram—V. N. Krivobok, Carnegie Institute of Technology, and M. A. Grossmann, Republic Steel Corp., Canton.

Study of a High-Chromium, Low-Carbon Steel—Arthur Phillips, Yale University, and R. W. Baker, Republic Steel Corp.

Corrosion Test for Research and Inspection of Alloys—W. R. Huey, E. I. DuPont de Nemours & Co., Wilmington, Delaware.

**Nature of the Nickel-Chromium Stainless Steels*—Edgar C. Bain and Robert H. Aborn, U. S. Steel Corp., Kearny, N. J.

Thursday Afternoon, Sept. 25

Process Reliability in Steel Making—George A. Dornin, Gathmann Engineering Co., Baltimore.

Tensile Properties of Carbon Steel Castings— J. V. Mcrae, and R. L. Dowdell, Bureau of Standards, Washington.

Casting Guns by the Centrifugal Process—Col. Tracy C. Dickson, Watertown Arsenal, Watertown, Mass.

Steel Ingots—H. H. Ashdown, Irvine, Pa.

Friday Morning, Sept. 26

Nitriding in Packing Materials and Ammonia—A. B. Kinzel and J. J. Egan, Union Carbide and Carbon Research Laboratories, Long Island City.

Further Investigations in Nitriding—Robert Sergeson and H. J. Deal, Republic Steel Corp., Massillon.

Nitriding the Larger Forgings—J. H. Higgins, Camden Forge Co., Camden, N. J.

Nitriding Furnaces and Their Equipment—W. J. Merten, Westinghouse Electric & Mfg. Co., East Pittsburgh.

**Microcharacter Hardness Tester*—C. H. Bierbaum, Lumen Bearing Co., Buffalo, N. Y.

Friday Afternoon, Sept. 26

Relation of Structure to Surface Hardness of a Case Hardened Steel—H. W. McQuaid and O. W. McMullan, Timken-Detroit Axle Co., Detroit.

Recent Developments in Gas Carburization—O. J. Wilbor and J. A. Comstock, Peoples Gas Light & Coke Co., Chicago.

Modifying Action of Ferrosilicon Upon the Process of Carburization—E. G. Mahin and F. J. Mootz, Notre Dame University, Notre Dame, Ind.

Resistance of Steels to Abrasion by Sand—Samuel J. Rosenberg, Bureau of Standards, Washington.

Metastable Equilibrium in Hypereutectoid Iron-Carbon Alloys—A. A. Bates and D. E. Lawson, Case School of Applied Science, Cleveland, H. A. Schwartz, National Malleable & Steel Castings Co., Cleveland.

ROCHESTER WILL EAT CLAMS

Sept. 13 Set as Date for Chapter's Big Holiday with Sports and Feast

The Rochester Chapter of the A.S.S.T. is planning to hold a real clambake on Saturday afternoon, Sept. 13, at the Old Homestead.

There will be plenty of clams, a baseball game, competitive sports (for which very desirable prizes will be given), horseshoe pitching, and all the other essentials of a real clambake.

All members of the A.S.S.T., as well as the Rochester Chapter members and their guests, are cordially invited to attend a clambake that they will tell their grandchildren about. The price will be $3.00 per plate.

GOLDEN GATE SEASON OPENS

Frank B. Coyle Is First Speaker on Western Chapter's 1931 Program

The 1930-1931 season for the Golden Gate chapter opened August 14 with a meeting at the Engineers' Club of San Francisco. Frank B. Coyle, research metallurgist for the International Nickel Co., New York, addressed the meeting.

"Nickel as an Alloying Element" was the title of the talk, which was well illustrated by slides. Myron Bird, chapter vice-chairman, presided during the technical session. Ivan L. Johnson as chapter chairman was in the chair during the business meeting which preceded Coyle's talk.

PLANNING PROGRAMS FOR NATIONAL METAL CONGRESSES IS TASK THAT HAS NO ENDING

Manuscripts Must Be Secured, Approved, Edited and Preprinted Before Work is Truly Completed

Plans for an A. S. S. T. convention program for any year begin to be made at least twelve months ahead of the first session. They begin even earlier than that if the constant, year 'round vigilance of the Publication Committee members is counted.

When news of an interesting process or a bit of keen research becomes known, the committee members, assisted to no small degree by volunteers from the members at large, try to make contacts with someone who will write a paper on the process or research and present it at the National Metal Congress.

Not always has it been comparatively easy to recruit good speakers. When the Society was younger and had not yet earned its present prestige, considerable "selling" was necessary, according to W. B. Coleman, a director of the Society who has been instrumental in building A. S. S. T. technical programs for the past four years.

"Keep the programs well balanced" is the recipe for planning a successful National Metal Congress. No session should be too long, nor should any one paper. Each subject covered should be interesting and the program as a whole should include the widest possible variety of truly informative papers. To plan such a program requires experience, and the quality of A. S. S. T. programs is a testimonial to the experience and ability of Mr. Coleman.

When a paper is first submitted to National Headquarters it is sent by Ray T. Bayless, assistant secretary in charge of technical activities, to the member of the Publication Committee whose knowledge and experience makes him best suited to pass judgment on the paper. If the paper is passed it is assigned a place on the program. If it is rejected, it is sent to another member of the committee for a second reading. If both members fail to approve, the paper is definitely rejected; if there is a disagreement, every member of the committee must review the paper before rejection or approval is made.

The "deadline" for preprinted papers is three months before the convention, but papers may be submitted up to two months before if no preprints are to be made.

As many papers as possible are preprinted in order to stimulate intelligent discussion at the meetings and also to familiarize members with the contents of the papers at an early date. Preprints are usually available about a month before the convention.

Preparations for preprinting are under the direction of Mr. Bayless. The manuscript must first be read carefully and instructions for printing marked. Halftones must be made of photographs and for the sake of uniformity, diagrams and sketches must be redrawn by a draftsman before line engravings are made.

Proofreading preprints includes not only a search for errors in spelling, punctuation and typography, but also checking back every word in the galley proofs against the original manuscript. Then the corrected galley proofs are "dummied", clipped and pasted as pages on sheets of blank paper. The illustrations are thoughtfully placed, the author's abstract is set at the front of the preprint and his biography and photograph on the last page. When all these details have been attended to, the type forms can be locked on the press and the actual printing started.

Some idea of the amount of work needed to publish preprints can be gained from the fact that 33 papers, totalling more than 740 pages, were preprinted this summer.

Responsibility for the convention programs was placed in Mr. Bayless' hands when he was recently made assistant secretary in charge of the Society's technical work. He will also edit *Transactions*, which will carry in full all convention papers together with their discussion.

W. R. BENNETT PLANT MOVES

Newark Steel Treating Concern Goes Into Larger Quarters

William R. Bennett, president of the Bennett Insured Steel Treating Co., Newark, N. J., has moved his plant into larger quarters at 310 Adams St.

Mr. Bennett was the first chairman of the New Jersey group of the American Society for Steel Treating and again served as chairman in 1929. Before moving to New Jersey, he was active in the affairs of the Hartford chapter.

OHIO FOUNDRY ADDS ROBINSON

S. R. Robinson, formerly foundry manager, Industrial Brownhoist Corp., Bay City, Michigan, has been appointed metallurgical engineer, Ohio Steel Foundry Company with headquarters at Springfield, Ohio.

CIVIL SERVICE BODY WILL GIVE METALLURGICAL TESTS

Applicants Must File by Sept. 9

The United States Civil Service Commission announces open competitive examinations for junior metallurgists. Applications must be on file with the Civil Service Commission at Washington, D. C., not later than September 9, 1930. The examination is to fill vacancies occurring in the Federal classified service throughout the United States. The entrance salaries range from $2,000 to $2,500 a year. Higher salaried positions are filled through promotion.

The duties will include general metallurgical work connected with the fabrication of manufactured articles, either ferrous or nonferrous; general metallurgical work including process control, physical testing of metallurgical materials or ores, microphotography and research work on a large variety of metallurgical problems.

The optional subjects are (1) physical metallurgy and (2) recovery metallurgy.

Competitors will be rated on practical questions on general metallurgy, elementary physics, elementary chemistry, general metallurgy and the optional subject chosen, and on a thesis to be handed to the examiner on the day of the examination.

Full information may be obtained from the United States Civil Service Commission, Washington, D. C., or from the Secretary of the United States Civil Service Board of Examiners at the post office or custom house in any city.

GRENELL JOINS BATTELLE

L. H. Grenell, metallurgical engineer of the Frigidaire Corporation, has resigned to join the staff of the Battelle Memorial Institute of Columbus, Ohio, to do special work on nonferrous metallurgy. Mr. Grenell is the present chairman of the Dayton Chapter. Before coming to Frigidaire Corporation, Mr. Grenell was a member of the staff of the Bureau of Standards at Washington, D. C.

F. L. Meacham, also of the Frigidaire Corporation, will succeed Mr. Grenell as chapter chairman.

ALMOST 6000 NAMES NOW ON A. S. S. T. MEMBERSHIP ROLLS

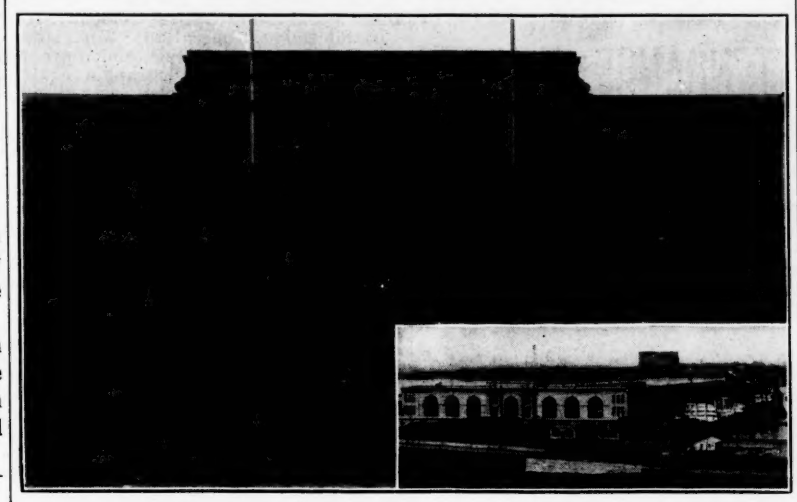
July Increase 53; Total 5974

The July gain in Society membership was 53, exactly that of the previous month. On July 1 the total stood at 5921, but on the first of August the total was 5974. Fifty-three new members were added during the month, and 15 former members were re-instated. Cleveland chapter advanced into 4th place in group one by adding 8 new members. This was the only change in chapter standings.

The chapters now rank as follows:

1.	2.	3.
Chicago	1. New Jersey	1. Ontario
Detroit	2. Los Angeles	2. New Haven
Pittsburgh	3. Hartford	3. Worcester
Cleveland	4. Milwaukee	4. Tri-City
New York	5. Golden Gate	5. Schenectady
Philadelphia	6. Lehigh Valley	6. Washington
Boston	7. Buffalo	7. Rhode Island
	8. Montreal	8. Rochester
	9. Cincinnati	9. York
	10. Canton-Mass.	10. Rockford
	11. St. Louis	11. Columbus
	12. Dayton	12. Springfield
	13. Syracuse	13. Southern Tier
	14. Indianapolis	14. Notre Dame
	15. North-West	15. Fort Wayne

HOME OF 1931 EXPOSITION



Boston's Commonwealth Pier, which will be the home of the 1931 National Metal Exposition during the week of September 26. The larger picture shows the main entrance to the pier; the insert gives an idea of the building's size. The Commonwealth Pier held the Exposition in 1924. The Hotel Statler has been chosen as convention headquarters because of its size and ample accommodations.

COL. A. E. WHITE IN BERMUDA

Col. Albert E. White, in charge of engineering research at the University of Michigan, is spending two months in Bermuda and West Indies. He will return in time for the Chicago convention.

Ten years ago Col. White was instrumental in bringing about the amalgamation of the Steel Treating Research Society and the American Steel Treaters' Society to form the American Society for Steel Treating.

W. P. EDDY WITH GENERAL MOTORS

W. Paul Eddy, Jr., recently metallurgist with the Brown-Lipe-Chapin division of the General Motors Corp., Syracuse, has become associated with the General Motors Truck Corp., Pontiac, as metallurgist.

"METAL PROGRESS" CONTENTS LISTED

Publication to be Printed and Mailed by Sept. 2

(Continued from Page One)

corrosion, written by a recognized authority on the subject is a featured story in this month's *Metal Progress*, as is a description of the history and the process of resistance welded pipe. Still another important article describes recent progress in the development of metals to resist high pressures.

The table of contents for the September issue of *Metal Progress* includes on its list the following articles and departments.

Temper to Avoid Grinding Cracks, Gerald R. Brophy, General Electric Co., Schenectady.

Centrifugal Castings Make Excellent Artillery, Colonel Tracy C. Dickson, Watertown Arsenal, Watertown, Mass.

Progress in Metals, L. W. Spring, Crane Co., Chicago.

The Question of Uniform Bolts, H. B. Pulsifer, Ferry Cap & Set Screw Co., Cleveland.

Speeding Nitriding Processes, A. B. Kinzel and J. J. Egan, Union Carbide and Carbon Research Laboratories, Inc.

Die Castings for Economy in Production, D. L. Colwell, Stewart Die Casting Co., Chicago.

Development of a Code for Fusion Welded Boiler Drums, C. W. Obert, Union Carbide and Carbon Research laboratories, Inc., Long Island City.

Exploring Metal's Insides with Radium, R. F. Mehl, Naval Research Laboratories, Washington, D. C.

Recently Discovered Facts About Corrosion, F. N. Speller, National Tube Co., Pittsburgh.

Lathe Transmission Gears, Donald M. Gurney, Warner & Swasey Co., Cleveland, Ohio.

Resistance Brazing—High Strength Joints Made at Low Temperatures.

Resistance Welded Pipe—A Much Discussed Innovation, Ernest E. Thum, Editor, *Metal Progress*.

Practical Points in Furnace Design, John C. Kielman, New Departure Mfg. Co., Bristol, Conn.

New Zeppelin A-Building—Facts About the World's Greatest Airship.

Letters from Correspondents in England, Norway, and Japan. Other interesting features.

NEW G. E. PHOTO FLASH LAMP DOESN'T SMOKE OR GO BOOM

Looks Like Ordinary Light Bulb

No flapper is the new photographic flash lamp developed by the incandescent lamp department of the General Electric Co., Cleveland. It doesn't smoke or make a noise; it doesn't get hot, and it leaves behind no odor of perfume, good or bad.

The rapid, bulb-enclosed flash makes it possible to take flashlight photographs in places heretofore almost impossible to "shoot", such as in trains, airships, theaters and under water.

The lamp consists of a clear bulb of standard design, with the flashlight filament coated with a special preparation, and with a quantity of very thin aluminum foil in crumpled sheet form within the bulb. The bulb is oxygen-filled.

When the circuit is closed the filament is lighted and this, in turn, lights the foil. The lamp operates on any 115-volt house supply, or with dry, storage or flashlight batteries. A new lamp is needed for each flash. The lamp is most efficient when used with suitable reflector equipment.

PROGRAM CHAIRMEN NAMED

(Continued from Page One)

of sales. Firth-Sterling Steel Co. McKeesport, Pa.

J. Fletcher Harper, Allis-Chalmers Mfg. Co., Milwaukee, Wis.; G. B. Waterhouse, Massachusetts Institute of Technology, Cambridge, Mass.; Jerome Strauss, Vanadium Corp. of America, Bridgeville, Pa.

C. H. Herty, Jr., U. S. Bureau of Mines, Pittsburgh; V. O. Homerberg, Massachusetts Institute of Technology, Cambridge, Mass.; E. C. Bain, U. S. Steel Corp., Kearny, N. J.

Vice-chairmen will be:

Frances H. Clark, Western Union Telegraph Co., New York City; A. H. d'Arcambal, Pratt & Whitney Co., Hartford, Conn.; E. F. Cone, *The Iron Age*, New York City.

R. S. Archer, Aluminum Co. of America, Cleveland; J. R. Adams, The Midvale Co., Nicetown, Philadelphia; V. T. Malcolm, Chapman Valve Mfg. Co., Indian Orchard, Mass.

HEAT TREAT 40 FOOT FRAMES FOR BIG TRUCKS AND BUSSES

Big Car-Type Oil Furnaces Used

Side frame channels for trucks and busses, many of them 30 to 40 ft. long, are heat treated and fabricated in the plant of the Parish Pressed Steel Co., Reading, Pa., which was described in the July 3 issue of *Steel*.

A typical bar for a heavy truck side frame is 360 in. long and is formed from a plate ⅞ in. thick and 30 in. wide. The analysis shows carbon 0.23 per cent; manganese 0.46; phosphorus 0.018; sulphur 0.027; chromium 0.50 and nickel 1.48. The plates are annealed in a 40-ft. car type furnace, oil fired, with automatic pyrometer control. Eighteen hours are required to bring the plates to 1550 deg. Fahr. where they are held for 8 hr. They are then cooled in the furnace to 600 deg. Fahr. and then allowed to cool further in air.

After fabrication, which consists of blanking, forming, punching and trimming, the bars are brought up to 1550 deg. Fahr. in a 40-ft. heat treating furnace with doors and roller conveyors at both ends. The bars are charged from one set of rollers and withdrawn and quenched at the other end of the furnace. Tempering temperature ranges from 900 to 1100 deg. Fahr., depending on the carbon and chromium content. The remaining operations in making the frames are sandblasting, straightening, drilling, assembling and painting.

CHICAGO PLANTS TO GREET ALL VISITORS

Many Kinds of Metal Working Firms Open for Inspection

The list of Chicago district plants which will be open for inspection by metals men during the National Metal Congress and Exposition includes steel mills, brass foundries, lead refineries, forge shops and other plants for the manufacture and fabrication of metals.

On Tuesday, Wednesday, Thursday and Friday morning, September 23-26 inclusive, at exactly 8:15 busses will leave the 7th Street entrance to the Stevens Hotel loaded comfortably with plant visitors. Tickets for the bus trips must be purchased in advance at the registration desk.

These plants have invited visitors to the Congress and Exposition to inspect their equipment and facilities on the mornings indicated:

Tuesday Morning

International Harvester Co., West Pullman Works

The party will see the manufacture of "collateral" automotive equipment, such as the roller bearings, magnetos and carburetors used by the International Harvester Company in its tractors and motor trucks.

Illinois Steel Co., South Works

Visitors will see a very complete steel mill which covers 574 acres and employs some 12,000 men. The works include eleven blast furnaces, Bessemer plant, open-hearth and electric furnaces; blooming and slab mills; forge press plant; rail, structural and plate mills; alloy bar mills; and foundry, shops, etc. New construction now under way includes fourteen open-hearth furnaces, a wide flange beam mill, a 49-inch slab and blooming mill, a 96-inch continuous plate mill and a 10-inch alloy bar mill.

Great Lakes Forge Co.

Visitors will see a modern drop forge plant with board hammers ranging in size from 600 to 7,500 pounds falling weight; the die department for manufacture of forging dies; the heat treating department for treating dies, tools and forgings; and the metallurgical and chemical laboratories.

Fusion Welding Co. and Carbo Oxygen Co.

Visitors will see the drawing and processing of a complete range of welding wire and rods for all manner of electric and gas welding, including wire for welding various alloy steels; the assembling and testing of electric welding machines; and the drawing and processing of very accurately-sized small gage wire.

The Carbo Oxygen Co. will show the separation of oxygen by fractional distillation and manufacture of commercial acetylene.

Wednesday Morning

Crane Company

Visitors will see several departments of the principal plant of the Crane Company. This plant covers a ground area of 151 acres and produces valves, fittings and plumbing accessories.

Liquid Carbonic Corp.

Visitors will see the manufacture of fountain and cold storage equipment which includes considerable forming of sheets, and interesting welding, brazing and soldering operations, and a brass foundry.

American Forge Co.

Visitors will see the only plant in America devoted exclusively to the manufacture of upset forgings. Equipment includes twenty-seven upset forging machines ranging in size from 2 to 7 inches, heat treating furnaces, saws, etc.

Sivyer Steel Castings Co.

Visitors will see the manufacture of carbon and alloy steel castings. The plant includes interesting melting, molding and heat treating equipment, also chemical and metallurgical laboratories.

International Harvester Co., Tractor Works

The visitors will see the manufacture and assembling of various sized tractors. The many interesting operations include forming, welding, machining and heat treating.

Thursday Morning

International Lead Refining Co.

Visitors will see the plant of the International Lead Refining Company, located at East Chicago, Indiana, a Parkes Process lead refinery of 96,000 tons annual capacity, producing common desilverized pig lead, antimonial lead, and dore bullion. The bullion refined is received from the International Smelting Company, Tooele, Utah, and the American Smelting and Refining Company, East Helena, Montana. To some extent the refinery is a custom refiner of lead bullion. Lead residues and drosses from all plants of the Anaconda Company are treated, and limited quantities of scrap battery plates, lead drosses, and other secondary materials are purchased.

Western Electric Co., Hawthorne Works

Visitors will see the plant in which

Continued on Page Six

EXHIBITORS' LIST, WHAT THEY WILL SHOW AND WHO WILL BE IN ATTENDANCE AT BOOTH

List Made from Information in A. S. S. T. Headquarters on Aug. 20; Official Program to be More Complete

Acetylene Journal Publishing Company, Chicago. Booth 72.
Exhibiting: Magazines, books and educational matter pertaining to gas welding and cutting.
In attendance: M. S. Hendricks, editor.
Air Reduction Sales Co., N. Y. Booth 95.
Ajax Electrothermic Corporation, Trenton. Booth 5-D.
Exhibiting: A 1000-lb. Ajax-Northrup coreless high frequency induction furnace, and photographs showing installations of such furnaces and the equipment necessary for operating them.
In attendance: G. H. Clamer, president; E. F. Northrup, vice-president and technical adviser; Dudley Willcox, treasurer and assistant general manager; R. N. Blakeslee, secretary and sales manager; A. D. Meyer, sales metallurgist; G. F. Applegate, shop foreman.
Allegheny Steel Co., Brackenridge, Pa. Booth 9-D.
Allen Steel Company, Inc., Edgar, New York. Booth 5-B.
Exhibiting: Imperial "Major" high speed steel; Imperial "Extra Special" high speed steel; Imperial "Special" high speed steel; turning and finishing steels; Minerva air hardening steel; self hardening steel; special chisel steel; Red Label steel; tack knife steel; die casting steel; solid Double Six production steel; hollow Double Six production steel; class "P" tool steel; class "E" tool steel; Stag tool steel; Talon tool steel.
In attendance: Henry Sears Hoyt, president of Edgar Allen Steel Co.; V. A. Greene, vice-president and general manager, Edgar Allen Steel Co.; E. R. Carnell, director, Edgar Allen Steel Co.; H. R. Adams, manager Chicago branch; R. M. Brushingham, Detroit district manager.
Aluminum Company of America, Pittsburgh. Booth 5-L.
Exhibiting: Aluminum in all commercial forms.
American Brass Company, Waterbury. Booth 92.
Exhibiting (in operation): Anaconda nonferrous welding rods. Featuring Tobin Bronze and Everdur Welding Rods. Interesting samples of cast iron pieces welded with Tobin Bronze. Display of Everdur Metal—a copper-rich alloy, containing manganese and silicon, with the strength of mild steel. The proper methods used in welding with Tobin Bronze filler rods and the oxyacetylene process will be demonstrated.
In attendance: W. H. Dowd, exhibit manager; A. M. Dinkler, assistant manager, Ansonia branch; W. C. Swift, service engineer; A. L. O'Brien, service engineer; C. D. Pillsbury, agent; I. C. Ralph, service engineer; J. P. Hocking, F. W. Hackett, F. E. Hill, H. G. Wallis.
American Car and Foundry Company, New York. Booth 51.
Exhibiting (in operation): 1 A. C. F. Berwick Electric Rivet Heater; 1 A. C. F. Berwick Electric Forging Heater, for heating stock for forging and upsetting; heat can be made at the end or at points along the bar or piece.
In attendance: F. C. Cheston, A. G. Wood, Harold Cheston.
American Cyanamid Company, New York. Booth 19-B.
Exhibiting: Samples and literature.
In attendance: G. N. Omohundro, industrial chemicals division; H. H. Suddard, Chicago representative; G. B. Horsfull, Detroit representative; H. M. Sunderland, Cleveland representative; Geo. D. Johnson, metallurgist; P. E. Holder, field metallurgist; E. L. Knapp, field metallurgist.
American Forge Company, Chicago. Booth 7-F.
Exhibiting: Complete line of sample upset forgings arranged for exhibit.
In attendance: W. E. Crocombe, president; F. Gauch, vice-president; F. L. Moore, production manager; A. Nettenstrom, assistant plant superintendent; H. Mulford, sales manager; S. E. Burns, sales department; L. W. Eighmy, sales department.
American Gas Association, N. Y. Booths 50, 52 and 62.
American Gas Furnace, Co., Elizabeth, N. J. Gas Section.
American Machinist, New York. Booth 15-F.
Exhibiting: Business publication—*American Machinist.*
In attendance: W. E. Kennedy, manager; L. E. LeGrand, assistant editor; K. H. Condit, editor and publishing director; W. E. Irish; Ray Deen; Miss Anne LiSota; W. H. Shipman; O. Laughlin; and H. C. Stephenson.
American Steel and Wire Company, Chicago. Booth 71.
Exhibiting: Tested Premier Welding Wire and Rods, free from all impurities; cold drawn and cold rolled strip steel, for stamping and all manufacturing purposes; springs for the watch to the locomotive; manufacturing wires and rods in round, flat, square, oval, star and other odd shapes for various manufacturing purposes.
In attendance: F. Connell, W. E. Mackley and G. S. Rose of New York; E. S. Humphrys, C. J. McGregor, H. B. Maguire, A. E. Ward, P. M. Jones, W. L. Blazier, R. C. Fisher, L. S. Young, W. H. Cordes, E. E. Louis, and R. Francisco of Chicago.
Anchor Drawn Steel Company, Latrobe, Pa. Booth 24-B.
Andresen & Associates, Inc., F. C., Pittsburgh. Booth 43-B.
Armstrong-Blum Manufacturing Company, Chicago. Booth 29.
Exhibiting (in operation): Actual demonstration of metal sawing equipment. New model full ball bearing high speed Marvel Hack Saw, No. 6 and No. 6A, being shown for the first time on full automatic production cutting-off work; also showing the No. 8 Marvel Metal Band Saw in universal application to a wide variety of sawing work in bars, structural shapes, pipe, etc.; also showing actual public break-down test on Marvel High-Speed-Edge power hack saw blades.
In attendance: Harry J. Blum, secretary; Stanley A. Woleben, assistant secretary; and Gustav M. Hess, salesman.
Armstrong Brothers Tool Company, Chicago. Booth 27.
Exhibiting: Lathe, planer and shaper tools; lathe dogs; "C" clamps; ratchet drills; drop forged wrenches; pipe tools.
In attendance: Horace Armstrong, W. T. Armstrong, George Nufer.
Armstrong Cork and Insulation Company, Lancaster, Pa. Booth 6-L.
Exhibiting: Armstrong's insulating brick; nonpareil insulating brick; Armstrong's cork covering; Armstrong's corkboard roof insulation; Armstrong's high pressure covering.
In attendance: Paul Taichinger, manager, Chicago office; S. M. Jenkins, special sales representative; L. W. Bertelsen, representative, Pittsburgh office.
Associated Alloy Steel Company, Cleveland. Booth 3-D.
Exhibiting: An exhibit of stainless steels, Nirosta KA2 and Nitralloy.
In attendance: D. B. Carson, vice-president, in charge of sales; H. A. DeFries, chief metallurgical engineer; C. B. Boyne, assistant sales manager; K. G. Reynolds, architectural representative; W. L. Wiewel, sales manager—tube division; P. E. Floyd, district sales manager—Chicago; W. Kinsey, district sales manager—Cincinnati; A. N. Vogt, district sales manager—Cleveland; J. E. Polhemus, district sales manager—Detroit; R. P. McCarty, district sales manager—New Haven; P. L. Coddington, district sales manager—New York; G. F. Wilson, district sales manager—Philadelphia; W. L. Weaver, district sales manager—Albany.
Automatic Temperature Control Company, Inc., Philadelphia. Booth 27-D.
Exhibiting: Valves disassembled for inspection, including "V" port proportional opening types; motor operated controllers; Motomerco relays to operate three-position valve controllers from a two contact instrument; time cycle contactors for automatic greasing, load advancing in continuous furnaces, etc.; motor operated interrupters; electric heat controller; contact instruments of various makes will be shown operating with control equipment.
Automotive Industries, Phila. Booth 9-L.
Babcock and Wilcox Company; Babcock and Wilcox Tube Company, New York. Booth 32-B.
Exhibiting: Welded pressure vessels which have withstood more than 2,000,000 pressure tests; specimens of welds in carbon steel and stainless alloy steels made by the Babcock and Wilcox Co. new welding technique; chromium nickel alloy steel process equipment showing typical welded construction; heat exchangers of stainless steel; castings made in chromium alloy steels; oil still headers cast in chromium nickel alloy steel; cast alloys for high temperature service; stainless steel tubing.
In attendance: W. W. Eaton, J. Brett, A. G. Reilly, A. R. McAllister, J. C. Hodge, S. J. Crooker, W. E. Sparrow, Jr., R. L. Ripley, H. D. Newell, N. Hamilton, Magnus Christensen, W. M. Glen.
Bastian-Blessing Co., Chicago. Booth 96.
Bausch and Lomb Optical Company, Rochester. Booth 34-B.
Exhibiting (in operation): Microscopes, specially designed for use in the steel treating industry, photomicrographic apparatus, colorimeters, tool makers' microscopes, metallographic equipment, magnifiers, reading glasses and numerous other optical instruments of interest to steel treaters.
In attendance: I. L. Nixon, H. L. Shippy, W. Patterson, M. Stevens.
Bell & Gossett Co., Chicago. Booth 46-B.
Bethlehem Steel Company, Bethlehem, Pa. Booth 30-B.
Exhibiting: Structural steel exhibit to consist of framework of structural steel and display boards showing typical sections; alloy steel exhibit showing samples of Mayari steel, Supertemp steel, Resilia Spring steel and other alloy steels; an exhibit of corrosion resisting or non-rusting steels, including Bethalon, the free-machining, non-rusting steel; an exhibit of tool steels featuring Comokut and Bethlehem Special High Speed tool steel.
In attendance: G. F. Hocker, manager of sales, forgings and castings; R. S. Tucker, manager of sales, alloy steels; D. C. Roscoe, manager of sales, tool steels; T. J. Fitzgibbons, sales agent, drop forgings; F. H. Baldwin, sales department; J. E. McKinney, metallurgical engineer; W. R. Shimer, metallurgical engineer; T. G. Foulkes, research metallurgist; J. P. Witteman, metallurgist; A. P. Spooner, engineer of tests; J. H. Stoll, assistant engineer of tests; H. R. Weeman; H. W. Hibshman; W. E. Titus; H. E. Graffin; G. Cushman; J. W. Codding; F. E. Fisher; R. MacDonald; J. F. Gaffney.
Botfield Refractories Company, Philadelphia. Booth 45.
Exhibiting: Complete showing of refractories cements and mixtures; complete showing of specimens bonded and surfaced with refractories cements and mixtures.
In attendance: Axel H. Engstrom, sales manager; W. B. Smith, mid-western field representative.
Bristol Company, Waterbury. Booth 27-B.
Exhibiting (in operation): Bristol's indicating and recording instruments, also motor-operated control valves for oil, gas and steam, and automatic temperature controllers.
In attendance: H. L. Griggs, general sales manager; H. W. Moss, Detroit district manager; L. G. Bean, Chicago district manager; R. M. Walker, Pittsburgh district manager.
Brown Instrument Co., Phila. Booth 21-B.
Calorizing Co., Wilkinsburg, Pa. Booth 12-Ba.
Campbell, Inc., Andrew C., Bridgeport, Conn. Booth 25.
Carboloy Company, Inc., Detroit. Booth 10.
Exhibiting (in operation): A turret lathe tooled up with Carboloy tools to simulate conditions surrounding ordinary production job; display boards showing typical tools and specimens of materials machined with Carboloy tools, wire drawing dies, with specimens of materials drawn.
In attendance: W. W. Fullagar, Chicago district manager; P. O. Deeds; N. N. Shepherd; G. M. Moote; E. V. Johnson; F. R. Johnson; P. J. Connor; W. S.

Continued on Page Five

SIMONDS SAW CO. BUILDING

Construction of World's Largest Saw Factory to Start Immediately

The largest saw factory in the world, consisting of building units of the most modern type, is to be built immediately by the Simonds Saw and Steel Company in Fitchburg, Mass., where the industry was founded nearly a century ago.

Announcement of the purchase of a large tract of land, located in the easterly section of Fitchburg, along the line of the Fitchburg Division of the Boston & Maine Railroad, has just been made by the officials of the Simonds Saw and Steel Company. Simultaneously with this news comes the statement that an entirely new plant for the manufacture of saws, machine knives, and files, will be built on the recently acquired location. Plans for this plant have been completed after an extensive survey by expert engineers.

This new Simonds factory, it is estimated, will cost about one-million-and-a-half dollars. The present extensive manufacturing plant will be vacated when the new buildings are ready for occupancy. This is expected to be about June 1, 1931.

OAKES, INDIANAPOLIS MEMBER, DEAD

Frank J. Oakes, general superintendent of the Link-Belt Company's Indianapolis plant, died July 19 at his home in that city. He had been associated with the Link-Belt Co. for 37 years. He was an active member of the Indianapolis chapter of the American Society for Steel Treating.

Leaflet 20479, published by the Westinghouse Electric and Mfg. Company, describes Flex-Arc electrodes and contains several illustrations showing these electrodes and their applications.

WHAT THEY WILL EXHIBIT

(Continued)

Baker; E. C. Howell, advertising manager; V. L. Allen, assistant advertising manager.

Carborundum Co., Niagara Falls. Booth 53.

Carborundum Company, Perth Amboy, N. J. Booth 53.

Exhibiting (in operation): A completely assembled section of the Carborundum Company Recuperator will be exhibited, showing the construction details of the recuperator and by means of fans the operation of the unit will be illustrated; in addition, panels will be employed, upon which are mounted various samples of refractory brick, tile and special shapes, including hearths and muffles for heat treating furnaces and samples of different types of high temperature cements, manufactured by the Refractory Division of the Carborundum Company.

In attendance: R. A. Beverley, S. A. Fenno, district sales managers; J. A. King, R. S. Baker, R. J. Penny, W. C. Thiess, sales engineers.

Carpenter Steel Company, Reading, Pa. Booth 6-B.

Exhibiting: Carpenter stainless steels, as manufactured in our mills, and articles made of these materials; the different steps in DIOK tool steel inspection (disc inspection by the hot acid etch method) will be illustrated.

In attendance: F. A. Bigelow, president; J. H. Parker, vice president; R. V. Mann, assistant to president; F. R. Palmer, assistant to president; B. H. DeLong, metallurgist; G. V. Luerssen, metallurgical department; P. B. Greenawald, metallurgical department; O. V. Greene, metallurgical department; G. H. Edmonds, sales department; W. M. Loos, sales department; R. L. Williams, Detroit district sales manager; H. J. Joyce, Indianapolis district sales manager; J. B. Guthrie, Chicago district sales manager; K. L. Crickman, St. Louis district sales manager; E. Von Hambach, L. E. Cooney, R. I. Beeson, C. W. Windfelder, E. E. Mueller, J. L. Hall and Leroy Owen, sales representatives.

Case Hardening Service Company, Cleveland. Booth 46-B.

Exhibiting: Hardening room materials and equipment; Bohnite, carburizing compound; Caseite, cyanide hardening compound; Cyanide, all grades; Drawite, drawing salts, range 300 to 1200 degrees Fahr.; Bathite, hardening salts, range 1200 to 1700 degrees Fahr.; Cleancoat, lead pot covering; Non-Case, anti-carburizing paint; pressed steel pots; B and G oil coolers; Resistal sheet alloy pots and boxes.

In attendance: W. C. Bell, president; E. J. Gossett, vice-president; J. S. Ayling, sales manager; C. P. Critzer, sales engineer.

Chemical Catalog Company, Inc., New York. Booth 8-B.

Exhibiting: *Metals and Alloys*, a monthly technical journal devoted to the advancement of scientific metallurgy; also technical and scientific books published by the Chemical Catalog Co.

In attendance: H. W. Gillett, editorial director; Richard Rimbach, associate editor; Francis M. Turner, Jr., president; H. B. Lowe, vice-president; Wm. P. Winsor, district manager, Cleveland; G. E. Cochran, district manager, Chicago.

Chicago Steel Foundry Company, Chicago. Booth 41.

Exhibiting: A number of unique and interesting castings in Pyrasteel for heat resisting, and in Evansteel for strength and abrasion resisting.

In attendance: David Evans, president; B. G. Tarkington, engineer; C. McA. Evans, assistant to president; J. A. Marr, works manager; Joe Frank, assistant superintendent; G. MacMillan, metallurgist; A. I. Gilbert, purchasing agent.

Chicago Steel & Wire Co., Chicago. Booth 106.

Climax Molybdenum Company, New York. Booth 23-D.

Exhibiting: Molybdenum in the various forms as used by the iron, steel, chemical and dye industries.

In attendance: H. L. Brown, acting general manager; J. B. Thorpe, assistant to president; A. Kissock, vice president, in charge of production; W. P. Woodside, district manager—Detroit; Geo. O. Loeffler, district manager—Pittsburgh; E. R. Young, metallurgical engineer—Detroit; J. Kent Smith, consulting metallurgical engineer.

Colonial Steel Company, Pittsburgh. Booth 24-B.

Columbia Tool Steel Company, Chicago Heights, Illinois. Booth 23-B.

Exhibiting: Clarite High Speed Steel, Maxite Super High Speed Steel, Superdie High Carbon-High Chromium Steel, Oildie Non-shrinking Steel, Buster Brand Alloy Steel, Special quality, Extra quality and Standard quality Carbon Tool Steel, in bar form; ingots, alloys and fractures; tools and articles made with Columbia tool steel.

In attendance: A. T. Clarage, president; R. M. Sandberg, general manager; C. B. Shoenberger, general superintendent; W. J. Mathews, superintendent of melting department; A. J. Scheid, Jr., metallurgist; T. G. Dougall, Chicago district sales manager; A. J. Scheid, Milwaukee district sales manager; A. W. Mierow; C. F. Scheid; W. M. Hopkins; T. L. Haines; L. Elsman; S. F. Evans.

Corhart Refractories Company, Inc., Louisville, Ky. Booth 6-F.

Exhibiting: Refractory shapes on tables with simple demonstrations of the properties of the material, also service photographs.

In attendance: Fred W. Schroeder, metallurgical engineer; H. W. Baque, sales engineer; Fred S. Thompson, sales manager.

Crucible Steel Co. of America. Booth 28-B.

Dardelet Threadlock Corporation, New York. Booth 19-D.

Exhibiting: Display of Dardelet nuts, bolts and threaded parts; applications of the Dardelet principle; cutting tools for the manufacture of Dardelet thread.

In attendance: Lucien C. Sprague, executive vice president; Norman C. McLoud, executive representative; Wm. L. McKay, sales promotion engineer; F. D. Moore, sales promotion engineer; Edward J. McManus, laboratory foreman.

Darwin and Milner, Inc., Cleveland. Booth 17-B.

Exhibiting: A general line of high class alloy tool steel products; display of dies and tools demonstrating quantity production, notably with the pioneer oil-hardening, non-deforming die steel Neor and air-hardened patented Cobaltcrom steel; display of form tool castings made of patent Cobaltcrom steel; and Darwin patent Cobaltcrom steel safety razor blades.

In attendance: Victor Tlach, president; John C. Koch, secretary; H. L. Harrison and Charles F. Lear, representatives.

Dearborn Chemical Company, Chicago. Booth 6-D.

Exhibiting: No-ox-id, the chemically compounded rist preventive; No-ox-idized Wrappers; Dearborn mill coat; Lo-ac, a concentrated water soluble rust inhibitor; powdered and liquid cleaners.

In attendance: E. M. Converse, Chicago; assisted by C. C. Rausch, Chicago; C. I. Loudenback, Detroit; J. A. Craenner, Pittsburgh.

Driver-Harris Company, Harrison, N. J. Booth 20-B.

Exhibiting: A diversified exhibit of heat treating containers and furnace parts made of "Nichrome", the original heat-resisting alloy. There will be on display carburizing boxes, both cast and sheet and also boxes combining sheet and cast parts; die cast pyrometer protection tubes; lead, salt and cyanide pots; dipping baskets; trays, rollers, fixtures and other furnace parts; bolts and nuts; retorts, mufflers and small intricate castings.

In attendance: F. L. Driver, Jr., president; F. V. Lindsey, vice-president and sales manager; J. M. Lohr, metallurgist; J. C. Bilek, Chicago sales manager; Mr. Thornquist; J. B. Shelby; G. M. Pinney; W. E. Blythe, Detroit sales manager; L. Prior; C. Pettit; Messrs. Hobbie and Eckley.

Duriron Company, Dayton, Ohio. Booth 43.

Exhibiting: Duriron and Durimet acid-resisting pumps, exhaust fans, valves, tank rods, steam jets and Durimet welded pickling tank.

In attendance: M. W. Smith, G. A. Baker, N. E. Philpot, E. R. Suter, R. C. Schenk.

Eclipse Fuel Engineering Company, Rockford, Ill. Booth, Gas Section.

Exhibiting (in operation): Some new developments in combustion equipment for large gas-fired furnaces, including an operating layout of centrifugal blowers, automatic air and gas proportional mixers, automatic temperature controllers and burners; will also exhibit typical heat treating furnaces and new developments in accessory equipment; various types of high and low pressure gas burners for large capacity uses will be arranged for demonstration; included also will be automatic temperature control equipment and several proportional gas and air mixing systems; new immersion type heating equipment will be shown.

In attendance: G. W. McKee, O. M. Olsen, K. A. Scharbau, D. A. Campbell, L. J. Strohmeyer, E. A. Stoner, C. H. Martin, O. N. Sellers, C. J. Michelet, P. L. Reymond.

Elkon, Inc., New York City. Booth 98.

Electric Furnace Company, Salem, Ohio. Booth 4-L.

Exhibiting: Over 100 photographs of Electric, Oil and Gas fired furnace installations, including new chain belt conveyor, pit type, car type, recuperative, roller hearth and rotary furnaces, for annealing, carburizing, normalizing, enameling, nitriding, hardening, drawing, forging, billet heating and

Continued on Page Six

WESTERN SHOW PROGRESSES

(Continued from Page One)

Coast Electrical Association; Pacific Coast Gas Association; Society of Automotive Engineers.

Ivan L. Johnson, Best Steel Casting Co., Oakland, is chairman of the local general committee which is working with W. H. Eisenman, secretary of the A. S. S. T. and director of the Exposition. Other members of the committee are: Frank B. Drake, Johnson Gear Co., Berkeley; Myron Bird, California Saw Works, San Francisco; and R. S. Hirst, Hall-Scott Car Co., Berkeley.

Howard S. Taylor, department of mechanical engineering, Stanford University, is chairman of the program committee; James V. Coulter, Earle M. Jorgenson Co., Oakland, heads the exhibit committee; plant inspections will be arranged by a group under John R. Gearhart, John R. Gearhart Co.; Harold E. Gray, Pacific Coast Steel Corp., is planning entertainment features; registration will be under G. E. Batten, Ludlum Steel Co.; and S. Craig Alexander, Tay-Holbrook, Inc., will be in charge of attendance.

DRIVER-HARRIS TO MELT 18-8

The Driver-Harris Company, Harrison, N. J., has been granted a melting license by the Krupp Nirosta Company, Watervliet, N. Y., for the production of KA-2 in the form of castings, rods, sheets, strips and wire. Some of this material will be exhibited in the Driver-Harris booth at the National Metal Exposition.

WROTE PAPERS FOR CONGRESS

Radium rays can penetrate ten inches of solid metal, Messrs. Mehl, Doan and Barrett will tell the National Metal Congress in Chicago in a paper which they have written describing their work with radium's gamma rays. J. S. Vanick and P. D. Merica, International Nickel Co., will discuss a corrosion and heat resisting cast iron which contains nickel, copper and chromium.

Condensed Program, National Metal Congress, Chicago

Monday, Sept. 22	Tuesday, Sept. 23	Wednesday, Sept. 24	Thursday, Sept. 25	Friday, Sept. 26

MORNING SESSIONS

A. S. S. T. TECHNICAL SESSION North Ballroom	A. S. S. T. SESSION North Ballroom *"Sales"*	A. S. S. T. ANNUAL MEETING North Ballroom	A. S. S. T. TECHNICAL SESSION North Ballroom *"Corrosion Resisting Metals"*	A. S. S. T. TECHNICAL SESSION North Ballroom *"Nitriding"*
A. W. S. Congress Hotel *"Registration"*	A. W. S. BUSINESS SESSION Congress Hotel	A. W. S. TECHNICAL SESSION Congress Hotel	A. W. S. TECHNICAL SESSION Congress Hotel *"Railroad Welding"*	A. W. S. TECHNICAL SESSION Congress Hotel
A. I. M. E. (Iron and Steel Div.) TECHNICAL SESSION South Ballroom *"Iron Ore"*	A. I. M. E. (Institute of Metals) TECHNICAL SESSION South Ballroom *"Aluminum"*	A. S. M. E. (Machine Shop Practice Div.) TECHNICAL SESSION Upper Tower Room *"Polishing and Repairing"*	A. I. M. E. (Iron and Steel Div.) TECHNICAL SESSION South Ballroom	A. S. M. E. (Iron and Steel Div.) TECHNICAL SESSION Upper Tower Room *"Furnaces"*
			A. S. M. E. (Iron and Steel Div.) TECHNICAL SESSION Upper Tower Room	

AFTERNOON SESSIONS

A. S. S. T. TECHNICAL SESSION North Ballroom	A. S. S. T. TECHNICAL SESSION North Ballroom *"Forgings"*	A. S. S. T. TECHNICAL SESSION North Ballroom *"Theoretical Metallurgy"*	A. S. S. T. TECHNICAL SESSION North Ballroom *"Steel Melting"*	A. S. S. T. TECHNICAL SESSION North Ballroom *"Carburizing"*
A. W. S. TECHNICAL SESSION Congress Hotel *"Structural Steel"*	A. W. S. TECHNICAL SESSION Congress Hotel *"Research"*	A. W. S. TECHNICAL SESSION Congress Hotel *"Testing of Welds"*	A. W. S. TECHNICAL SESSION Congress Hotel	A. W. S. TECHNICAL SESSION Congress Hotel
A. I. M. E. (Iron and Steel Div.) TECHNICAL SESSION South Ballroom *"Iron Ore"*	A. I. M. E. (Institute of Metals) (Iron and Steel Div.) TECHNICAL SESSION South Ballroom *"Theoretical Metallurgy"*	A. I. M. E. (Institute of Metals) TECHNICAL SESSION South Ballroom	A. I. M. E. (Institute of Metals) PLANT VISITS	A. S. M. E. (Iron and Steel Div.) TECHNICAL SESSION Upper Tower Room *"Combustion and Furnaces"*
	A. S. M. E. (Machine Shop Practice Div.) TECHNICAL SESSION Upper Tower Room *"Phenol Materials"*	A. S. M. E. (Machine Shop Practice Div.) TECHNICAL SESSION Upper Tower Room *"Nitriding"*	A. S. M. E. (Iron and Steel Div.) TECHNICAL SESSION Upper Tower Room	

EVENING EVENTS

	A. S. M. E. (Machine Shop Practice Div.) TECHNICAL SESSION Lower Tower Room *"Machine Tool Motors"*	A. S. M. E. BANQUET South Ballroom	A. S. S. T. BANQUET North Ballroom	
	A. I. M. E. BANQUET South Ballroom		A. W. S. BANQUET Congress Hotel	

WHAT THEY WILL EXHIBIT

(Continued)

process heating—also specially built gantry cranes, charging machines and other labor saving material handling equipment used in connection with furnaces; samples of chain belt conveyor, cast metallic heating elements, roller rails and miscellaneous other parts used in these furnaces, will be on display; printed matter and bulletins are available.

In attendance: F. T. Cope, general manager and chief engineer; R. F. Benzinger, vice-president; S. F. Keener, sales manager; N. H. Knowlton, assistant sales manager; M. H. Mawhinney, fuel furnace engineer; A. H. Vaughan, assistant chief engineer; G. P. Lozier, superintendent; S. J. Eberwein, assistant superintendent; R. C. Oyster, chief designer; A. F. Kingsley, chief draftsman; A. E. Wright, advertising manager; C. L. West, K. U. Wirtz, W. S. Bowling, sales engineers; T. B. Bechtel, Chicago district representative; F. J. Peterson, B. C. Thompson, R. D. Thomas, Detroit district representatives; W. M. Smith, eastern sales representative.

Electric Steel Founders' Research Group, Chicago. Booth 39-B.

Exhibiting: Miscellaneous small and medium-sized castings of carbon or common steels, and alloy or special steels, as made regularly in Research Group foundries, from metal produced in electric furnaces; plant views, physical test specimens, and other details indicative of Group plant practices.

In attendance: R. A. Bull, director; C. N. Ring, assistant director.

Ferner Company, R. Y., Washington, D. C. Booth 14.

Exhibiting (in operation): Equipment made by the Societe Genevoise d'Instruments de Physique, of Geneva, Switzerland, and will include one of their latest type of Swiss Jig Boring Machines, size 4B which will be operated, demonstrating its accuracy and speed in the drilling and boring of holes in jigs and fixtures; one of their Universal Measuring Machines, 20-inch capacity, will also be exhibited, and the latest improved type of micro-indicator support for the measurement of steel balls; other measuring equipment to be exhibited will include a micro-indicator support type U-2 and a new one, type U-3, for the measurement of various metal parts; also exhibited will be the line of Dilatometers made by the S. A. de Commentry-Fourchambault et Decazeville of Imphy, France; one of their Thermal Analysers, a recording instrument for showing the expansion of a test specimen in comparison with a standard in an electric furnace giving temperatures up to 1000 degrees Cent., and two different dilatometers will also be shown, one registering mechanically and one recording photographically.

In attendance: R. Y. Ferner, U. S. and Canadian representative; Charles T. Ameel, S. E. Kenworthy, W. E. Bailey, demonstrators; Lambert G. Neff, A. W. Bissell, Chicago representatives; Walter S. Ryan, Detroit representative.

Ferry Cap and Set Screw Company, Cleveland. Booth 2-L.

Exhibiting: Cap screws; set screws; milled studs; standard and special screws and bolts in alloy steels; connecting rod bolts; cylinder head bolts; flywheel bolts; king bolts; tie rod bolts; hardened and ground parts; Ferry patented acorn nuts—covered and semi-covered.

In attendance: H. D. North, vice-president and sales manager; Herbert A. Keith, H. B. Pulsifer, metallurgist, Cleveland; A. L. Whittemore, W. J. Graham, Chicago; W. M. Leach, Detroit.

Finkl and Sons Company, A., Chicago. Booth 2-D.

Exhibiting: Pictures of plant operations, forgings, etc.; also a Neon electric sign representing a die block.

In attendance: C. E. Finkl, general manager; Fred Finkl, works manager; Wm. Finkl, M. R. Chase, metallurgical engineer; E. H. Graham, Detroit district representative; T. P. Wallace, Cincinnati district representative; W. H. Rieger, Pittsburgh district representative; J. M. Curley, New England district representative; H. Berg, New England district representative.

Firth-Sterling Steel Company, McKeesport, Pa. Booth 37-D.

Exhibiting: A glass case showing the materials entering into the manufacture of tungsten carbide and showing these materials at various steps of the process; this case will also contain representative tools of tungsten carbide; another case containing photographs and tabular matter on glass plates illuminated from behind; these photographs will show typical operations with Firthite, Circle C High Speed Steel and Cromovan Triple Die Steel; the tabular matter will compare our products with similar products; a motor driven device showing the comparative cutting speeds (average) of high speed steel, super high speed steel and tungsten carbide tools; booklets and other literature.

In attendance: L. G. Firth, general manager; D. G. Clark, director of sales; G. J. Comstock, director of research; O. K. Parmiter, metallurgical engineer; R. S. Stevick, works manager; A. S. Martin, manager, engineering department; M. F. Judkins, Firthite department; Frank Marth, assistant works manager; C. G. Thoma, advertising manager; O. T. Smith, Boston district manager; H. I. Moore, Hartford district manager; A. E. Barker, New York district manager; W. C. Royce, Cleveland district manager; G. A. Jacobs, Detroit district manager; E. T. Jackman, Chicago district manager; W. J. MacFarland and J. V. Little, Philadelphia office. Salesmen: Al. Mattson, Ira A. Rabitoy, G. R. Bunting, A. M. David, E. W. Nelson, J. H. Johnson, R. F. Kimber, M. J. O'Brien, W. A. Ruppel, R. J. Varney, T. H. Garlick, Harry Jarvis, Fred Jarvis, D. E. Jackman, Jr., W. A. Nungester, C. O. Ericke, T. A. Larecy, E. D. Roberts, H. E. Lennon, Geo. J. Bauer, F. G. Davis, G. A. Jacobs, R. K. Koon, Albert R. Baker, Charles E. Hughes, Alan Jackman, William Loach, F. N. Mead, I. Olsen, L. S. Russell, Joseph Smith, Geo. Sutcliffe, John Van Duyne, E. T. Broaddus.

Ford Company, J. B., Wyandotte, Mich. Booth 26.

Exhibiting (in operation): Glass tanks showing methods for agitating metal cleaning solutions by air; the glass tanks enable one to see what takes place in an agitated solution in comparison to an unagitated solution; large picture of plant; samples of metal cleaners.

In attendance: B. N. Goodell, W. M. Cole, C. S. Tompkins, C. R. Beaubien, H. W. Faint, all of the Industrial Department.

Fusion Welding Corporation, Chicago. Booth 106.

Exhibiting (in operation): New applications, welding equipment and supplies developed by the company's Research Department during the past year; Weldite welding rods for both gas and electric welding will be demonstrated. These new rods represent marked improvements in weld properties and operating characteristics. The Weldite line represents over forty distinctly different welding rods designed to meet every requirement; the Fuzon line of arc welding generators will be on display and in operation; these include models of various capacities, both portable and stationary; the complete line of Fuzon accessories and supplies will be displayed.

In attendance: J. B. Green, president; L. F. Collins, sales manager; Dana Summers, general superintendent; R. W. Holt, research engineer; F. A. Green, eastern district manager; M. P. Hare, southwest district manager; R. O. Waldman, western district manager; A. Bernard, sales engineer; R. F. Beazell, sales promotion.

Gathmann Engineering Co., Baltimore. Booth 33-B.

Gehnrich Oven Company, Inc., Long Island City, N. Y. Booth, Gas Section.

Exhibiting (in operation): Small continuous conveyor oven for automatic dip, drain and bake of finishes on variety of metal parts; elaborate pictorial display of ovens for baking finishes, low temperature heat treating core baking, etc; the new Gehnrich oven book will be distributed.

In attendance: C. L. Gehnrich, president; A. V. Maday, vice-president; H. P. Rasmussen, manager, Chicago district; H. Gehnrich, New York office; and P. Kriegel, advertising manager.

General Alloys Company, Boston. Booth 22.

Exhibiting: Nickel chrome alloy, "Q-Alloys"; carburizing and annealing containers; cyanide and lead pots; furnace hearths, roller rails, heat and acid resisting chain, cyanide dipping baskets, recuperators, miscellaneous furnace parts, parts for every type heat treating furnace—carburizing, annealing, normalizing, hardening, tempering, forging, spheroidizing; tubes and retorts.

In attendance: H. H. Harris, president; W. K. Leach, general manager; G. C. McCormick, chief engineer; F. J. Blaney, general superintendent; W. R. Blair, E. E. Armory, engineering department; H. G. Chase, manager furnace parts division; R. M. Kirk, manager New York branch; Ralph Hare, New England representative; A. L. Grinnell, manager Detroit branch; E. R. Dougherty, manager Chicago branch; R. W. Herrick, Chicago branch; J. J. Donovan, Chicago branch; C. P. Mills, director chrome alloy department; J. C. Van Arman; Braun, a dog; Jerry, another dog; three airplanes.

General Electric Co., Schenectady. Booth 80.

General Electric X-Ray Corporation, Chicago. Booth 15-B.

Exhibiting: Radiographs showing how X-rays have been successfully employed in the inspection of high pressure fittings as well as a means of correcting foundry practices by determining the extent and nature of defects such as blowholes, inclusions, shrinkage, dendrites, etc.; also, a series of Laue diffraction patterns showing the effect of different types of rolling of sheet metal and the effect of various heat treatments.

In attendance: E. W. Page; W. C. Dee; S. Nielson; E. E. O'Donnell; and W. B. Andrews.

General Spring Bumper Corporation (Division of Houdaille-Hershey Corp.), Detroit. Booth 4-F.

Exhibiting (in operation): Polishing wheel set-up machine which replaces old method of hand set-up, saving 66%, approximately, of the labor and giving 20% more life to the wheels; this machine has been in actual operation in the General Spring Bumper Plants for two years.

In attendance: Chas. F. U. Kelly, vice-president Houdaille-Hershey Corporation; B. M. Short, vice-president General Spring Bumper Corporation; F. A. Cornell, vice-president Houde Engineering Corporation; J. B. O'Neill, special representative Houdaille-Hershey Corporation; C. G. Griffiths, special representative General Spring Bumper Corporation; R. R. Tompkins, special representative Houde Engineering Corporation.

Globar Corp., Niagara Falls. Booth 53.

Gordon Company, Claud S., Chicago. Booth 34-D.

Exhibiting: Pyrometer accessories, including thermocouples, switches, lead wire, protecting tubes, insulators and other accessories of a special nature and design for regular and special application.

In attendance: Claud S. Gordon, president; A. W. Anderson, superintendent; Richard Schoenfeld, sales manager; S. A. Silbermann, Indiana district representative.

Gray Iron Institute, Inc., Cleveland. Booth 45-B.

Exhibiting: Test bars of various types of gray cast iron, engineering data, results of various investigations, material of that type; all of interest to the engineer and production executive.

In attendance: Arthur J. Tuscany, manager; Chas. E. Mitchell, associate manager.

Great Lakes Forge Company, Chicago. Booth 20-D.

Exhibiting: All types of drop forgings ranging in weight from one ounce to 100 pounds each; typical drop forge dies, showing various operations required to make drop forgings; will have sales and engineering representatives present to explain in detail factors relative to the manufacture of drop forgings.

In attendance: G. C. Hodgson, president; W. C. West, vice president; C. A. Lamb, general manager; A. M. Steever, metallurgical engineer; R. J. Geisler, sales department.

Hagan Company, George J., Pittsburgh. Booth 47.

Exhibiting: Complete description of all types of industrial furnaces, including designs, photographs and performance data on many new and improved types of heat treating equipment using gas, oil, coal and electricity as a heating medium; arrangements can be made to visit plants using Hagan furnace equipment.

In attendance: R. E. Talley, president; C. F. Cone, engineer; V. A. Hain, district manager; J. Sandberg, district manager; A. D. Dauch, engineer.

Halcomb Steel Company, Syracuse. Booth 28-B.

Exhibiting (in operation): Corrosion and heat resisting steels and alloys and examples of uses of the same; also all grades of tool steels from ingot to finished bar.

In attendance: R. H. Dougherty, assistant to president; H. A. Pardee, general manager; J. T. Leyden, service metallurgist; H. J. Stagg, assistant manager; H. L. Day, metallurgist; J. H. Hinkley, Chicago branch manager; J. F. Kirwan, Cleveland branch manager; H. O. Lang, Detroit branch manager.

Hayes, Inc., C. I., Providence. Booth 38.

Exhibiting (in operation): High speed steel hardening furnace equipped with the Hayes Patented Atmosphere Control which prevents decarburization, pitting or grain growth of the work; this furnace is type HG-52. The Hayes "Certain-Curtain" Atmosphere Control gives positive regulation and control of furnace atmosphere; we will gladly harden sample tools for visitors.

In attendance: Carl I. Hayes, president; James E. Hines, vice-president and sales manager; Carl G. Paulson, sales engineer; and Charles H. Myrick, metallurgist.

Haynes Stellite Company, Kokomo, Indiana. Booth 82.

Exhibiting (in operation): Display of Haynes Stellite cutting tools, welding rod and special castings; Haystellite, the cast tungsten carbide; Hascrome self-hardening welding rod; Hastelloy castings—a new corrosion resistant alloy; demonstration of "Haynes Stelliting" process—deposition of Haynes Stellite welding rod on wearing surfaces to prolong life of parts.

In attendance: E. F. Smith, Chicago district sales manager; W. A. Becker, F. P. Shephard, sales engineers.

Heppenstall Company, Pittsburgh. Booth 7-L.

Exhibiting: Heppenstall catalogs will be distributed to all interested in high grade alloy steels, die blocks, trimmer steels, solid steel four cutting edge shear knives, and heavy forgings—both carbon and alloy steel.

In attendance: C. W. Heppenstall, president; B. B. Weinberg, vice president; D. A. Stuart, in charge of booth; F. C. Moyer, Detroit representative; J. A. Succop, research engineer; A. L. Wurster, Philadelphia special representative; G. I. Allen, Cleveland representative; L. A. Daines, Chicago representative; Mielke & Bemm, Milwaukee representatives; A. J. Porter, Jr., sales manager, Heppenstall Co., Bridgeport; C. J. Sauer, vice president, Heppenstall Co., Bridgeport; G. O. Desautels, Indianapolis representative; O. W. Mueller, Buffalo representative.

Hevi Duty Electric Company, Milwaukee. Booth 79.

Exhibiting (in operation): Electric vertical pressure carburizing furnace with complete temperature control and carburizing gas mixing machine; pot type furnace for hardening and drawing operations; small box type furnace with electro-magnetic winding for determining the AC_2 point of steel; small pot type furnace with electro-magnetic winding for determining Ac_2 point of steels submerged in cyanide bath; box type tool room furnace with electro-magnetic winding for determining the AC_2 point of steel.

In attendance: E. L. Smalley, president; F. A. Hansen, general manager; W. B. Cooley, sales manager; E. R. Brandau, Detroit district manager; F. J. Condit, Buffalo district manager; J. S. Ayling, Cleveland district manager; L. W. Hayden, Philadelphia district manager; E. G. Craig, New York district manager; C. H. Stevenson, Chicago district manager; H. L. Dunn, St. Louis district manager; F. Bathke, St. Paul district manager.

Holcroft & Company, Detroit. Booth 49.

Exhibiting: Photographs, blue prints and catalogues of heat treating furnaces.

In attendance: C. H. Martin, Chicago district manager; Bill Linsay, Detroit sales engineer; C. L. Joy, engineer; and R. T. Cadwell, vice-president.

Hoskins Manufacturing Company, Detroit. Booth 30.

Exhibiting (in operation): Small electric box type furnace with Chromel ribbon units, equipped with automatic temperature control; display of Chromel resistance wire and ribbon; indicating pyrometers.

In attendance: C. F. Busse, salesman; F. D. Archer, salesman; C. S. Kinnison, advertising manager; W. D. Little, sales manager; W. A. Gatward, chief engineer.

Houghton and Company, E. F., Philadelphia. Booth 35-B.

Exhibiting: The latest developments of Houghton research in the field of carburizing materials, quenching and tempering oils, liquid heating media for hardening or tempering, cutting oils, rust preventives, pickle controls, etc.

In attendance: G. W. Pressell, general sales manager—Philadelphia; H. E. Cressman, assistant general sales manager—Chicago; G. S. Rogers, assistant general sales manager—St. Louis; Wilbur J. Wright—Cleveland, Ohio; R. S. Crowell; F. J. Elliott; Reese Nelson; E. H. MacInnes; E. H. Kellogg; M. B. Skipper; W. L. Spencer; H. W. Vanderwall; Carl Wickbom.

Hyro Manufacturing Company, Inc., New York. Booth 77.

Exhibiting: One No. 10 Hyro automatic industrial furnace, for case hardening by cyanide and other salts, heat treating, etc.

In attendance: Chas. J. Martin.

Illinois Steel Co., Chicago. Booth 12-B.

Illinois Testing Laboratories, Inc., Chicago. Booth 26-D.

Exhibiting: Stationary and portable indicating pyrometers for heat-treating furnaces, draw furnaces and metal baths and general use; portable Pyro Lance for measuring the temperature of molten nonferrous metal; portable Thermo Lance for annealing ovens and furnaces; thermocouples; pyrometer accessories.

In attendance: J. A. Obermaier, engineer in charge; M. D. Pugh, sales manager; C. L. Schmal, representative.

Illinois Tool Works, Shakeproof Lock Washer Company, Wedge Lock Tool Company, Chicago. Booth 10-L.

Exhibiting: Variety of metal cutting tools; lock washers and locking terminals; tool holders, vises and clamps.

Continued on Page Seven

A.S.S.T. HAS 10TH BIRTHDAY

Continued from Page One

Steel Treating, had planned the first exposition of metal tools and products to be held under the society's auspices. More than 50 firms had exhibited in the show held in 1919 at the 7th Regimental Armory in Chicago. The 1920 exposition in Philadelphia was the second.

The annual conventions and expositions of the A. S. S. T. have become established in the field of metals as outstanding events of their kind. At the conventions are presented technical papers which describe the highest achievements in the metallurgical investigations of the past year. The National Metal Exposition, held at the time of the convention, is a great display of equipment and products of industries in the steel and nonferrous fields.

Since 1920, the A. S. S. T. has held its annual conventions and expositions in others of the great metal centers. Indianapolis was host in 1921, followed in successive years by Detroit, Pittsburgh, Boston, Cleveland, Chicago, Detroit, Philadelphia, and Cleveland. And now in 1930 the National Metal Congress and Exposition is again in Chicago.

In 1929, the A. S. S. T. sponsored the first of the biennial Western States Metal and Machinery Expositions, held in Los Angeles in January. The enterprise was received so enthusiastically that a second exposition will be held in San Francisco from February 16-20, 1931.

Past presidents of the American Society for Steel Treating are Albert E. White, 1921; Frank P. Gilligan, 1922; Tillman D. Lynch, 1923; George K. Burgess, 1924; William S. Bidle, 1925; Robert M. Bird, 1926; J. Fletcher Harper, 1927; Frederick G. Hughes, 1928; Zay Jeffries, 1929.

R. G. Guthrie, Peoples Gas Light & Coke Co., Chicago, is now president of the Society. J. M. Watson, Hupp Motor Car Corp., Detroit, is vice-president. A. Oram Fulton, Wheelock, Lovejoy & Co., Cambridge, Mass., is treasurer. W. H. Eisenman, Cleveland, is secretary.

The board of directors is composed of F. T. Sisco, A. H. d'Arcambal, O. E. Harder and W. B. Coleman.

WILL VISIT CHICAGO PLANTS

Continued from Page Three

most of the nation's telephone and talking picture equipment are produced. The cable manufacturing departments include the processing of copper wire bars into wire, insulating the wire with paper, stranding the insulated wire into cable, covering the cable with lead sheath, and packing the finished cable for shipment. Visitors will also see the methods used for reclaiming the copper, lead, and paper from junked or obsolete wire and cable. These operations include the melting and casting of both lead and copper into shapes for re-use. Visitors will see many very interesting applications of welding.

American Steel Foundries Co.

Visitors will see the plant at Indiana Harbor, Indiana, which makes all manner of steel castings. Equipment includes melting, molding and heat treating equipment as well as a well equipped research laboratory.

Friday Morning

A. Finkl and Sons Co.

Visitors will see the production of heavy forgings under a 1,000 and 2,000-ton press; production of die blocks under a 16,000-pound hammer and a 1,000-ton press; quenching of die blocks and machining of both small and heavy forgings.

Lindberg Steel Treating Co.

Visitors will see a commercial heat treating plant treating carbon, alloy and high speed steel; die hardening, carburizing and cyaniding; annealing and normalizing; nitriding; and general heat treating. The plant includes a complete metallurgical laboratory and electric, oil and gas fired box and continuous furnaces.

Dallas Brass and Copper Co.

Visitors will see at this division of the Revere Copper and Brass, Inc., an up-to-date brass and copper mill producing brass, copper and other nonferrous mixtures such as rich low brass, commercial bronze, phosphor bronze, etc., in strip, sheet and coil form; bus bar copper; copper anodes and lock seam tubing. The fabricating department produces pressed parts, eyelets and forgings. The warehouse stocks brass, copper sheet, tube and rod.

Aetna Ball Bearing Mfg. Co.

Visitors will see the making of ball bearings which includes interesting automatic presses and turning, heat treating and grinding operations.

Swift and Company

Parties will be conducted through the plant at 9:15 and 10:30 A. M. Tuesday, Wednesday, Thursday and Friday.

Visitors can take the South Side elevated at the Indiana Avenue Station. Take the train marked "Stock Yards" to Morris Station. The visitors' entrance to Swift and Company is about 100 feet east there from. Visitors must be on time.

WHAT THEY WILL EXHIBIT

(Continued)

In attendance: Harold C. Smith, president; F. W. England, vice president; C. L. Johnson, treasurer; P. J. Nelson, sales manager, Illinois, tools; J. M. Gribbie, sales manager, Shakeproof washers; C. J. Irwin, superintendent; S. O. Bjornberg, consulting engineer; A. W. Swanson; R. P. Leiner; J. LaBuda; E. E. Valy; F. W. Dority; Wm. Holly; A. W. Long; W. V. Klimmer.

International Nickel Company, Inc., New York. Booth 10-D.
Exhibiting: Typical examples of industrial applications of nickel and nickel alloys; members of our Development and Research Department will be in attendance to discuss the production or application of these products.
In attendance: T. H. Wickenden, C. McKnight, A. L. Roberts, F. B. Coyle, J. S. Vanick, A. G. Zima, H. J. French, J. W. Sands, R. L. Suhl, R. Cooper, Jr., W. C. Kerrigan, R. A. Wheeler, H. S. Lewis, E. J. Bothwell, F. H. Villaume.

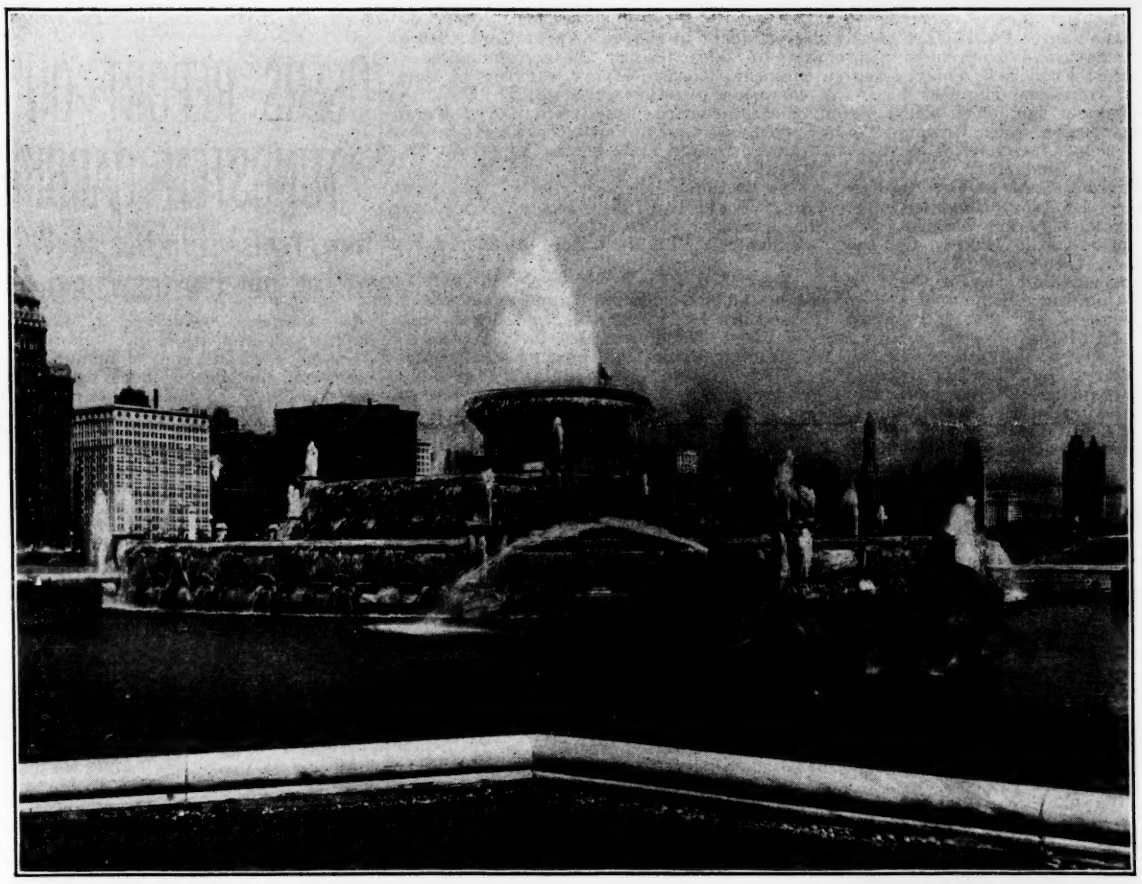
Iron Age Publishing Company, New York. Booth 2-B.
Exhibiting: The *Iron Age* and the reprints of the advertising and editorial section will be distributed to visitors and exhibitors on request.
In attendance: F. J. Frank, president; W. W. Macon, editor; G. L. Lacher, managing editor; C. G. Wright, news editor; E. F. Cone, associate editor; S. G. Koon, associate editor; R. E. Miller, editorial staff; R. A. Fiske, Chicago editor; F. L. Prentiss, Cleveland editor; Burnham Finney, Detroit editor; T. H. Gerken, Pittsburgh editor; C. S. Baur, general advertising manager; H. E. Leonard, advertising department; Oliver Johnson, advertising department; B. H. Hayes, advertising department; F. S. Wayne, western representative; W. B. Robinson, Pittsburgh representative; Emerson Findley, central western representative; Chas. Lundberg, Philadelphia representative; B. L. Herman, western New York state representative; Peirce Lewis, Detroit and Cincinnati representative; D. C. Warren, New England representative; W. C. Sweetser, New Jersey representative; C. H. Ober, New York representative; A. H. Dix, subscription manager.

Ivins' Steel Tube Works, Ellwood, Philadelphia. Booth 36-D.
Exhibiting: Seamless chrome-molybdenum tubing, seamless stainless steel tubing, low and high carbon seamless steel tubing and also seamless aluminum and duralumin tubing; some in very small sizes, such as .012" O. D.
In attendance: Ellwood Ivins, president; Horace S. Kircher, vice president; J. B. Cording, treasurer; Stanley Jeffries, metallurgist.

Jessop Steel Company, Washington, Pa. Booth 47-B.
Exhibiting: Tool steel bars, samples of finished tools made from our products; sheet steels of tool steel quality for all kinds of saws; also finished saws of various descriptions; stainless steel bars, sheets, plates and strips; articles made up of stainless steel to illustrate the various uses and applications of this steel; die steels and finished dies.

Grand Ball Room (above)

Many National Metal Exposition exhibitors will shortly set up booths in this grand ball room of the Hotel Stevens. Exhibitors whose booth numbers contain a "B" will have space in this great room. See the list printed elsewhere in this issue.



Buckingham Memorial Fountain in Grant Park, Chicago. This fountain compares favorably with the famous fountain at Versailles, near Paris.

One of the City's Show Places (at left)

Tower Room (shown below)

The Tower Ball Room, one of the beautifully appointed rooms of the Hotel Stevens will be given over to metal men during the National Metal Congress and Exposition. In this room will be held several of the technical sessions of the American Society of Mechanical Engineers.

In attendance: S. A. Grayson, president; R. E. Emery, vice-president; F. T. H. Youngman, secretary and treasurer; R. J. Murray, II, assistant secretary; R. E. Malmberg, metallurgist. District Sales Managers: A. C. Graham, Chicago; D. J. Hanna, Detroit; V. M. Wellman, Cleveland; R. M. Paxton, Jr., New York; A. W. Lucas, Hartford. District Representatives: W. J. Frederick, Cincinnati; M. W. Singer, Boston; J. S. Marlowe, Indianapolis; J. C. Dawson, A. G. Lambert, Toronto.

Jones & Laughlin Steel Corp., Chicago. Booth 3-L.

K-G Welding and Cutting Company, Inc., New York. Booth 104.
Exhibiting: Oxyacetylene welding and cutting apparatus, viz., welding and cutting torches, oxygen and acetylene regulators, "Waverless Flame" oxygen regulators.
In attendance: W. D. Flannery, vice president; A. W. Carr; F. O. Weber; H. H. Kress.

Keller Mechanical Engineering Corporation, Brooklyn. Booth 8-A.
Exhibiting (in operation): Kellerflex Flexible Shaft Machine; a new auto body sanding and polishing machine on small roller floor stand with right angle sanding and polishing equipment; a new high speed flexible shaft machine for shaft speeds direct into the handpiece, 15,000 R.P.M.; an entirely new machine equipped with two shafts; one for heavy work at slow speed and one for light work at high speed; the following new attachments will be shown: undercutting attachment for undercutting mica; filing attachment; chipping hammer; slow speed attachment; and complete line of rotary files consisting of over 200 different shapes and cuts.
In attendance: H. P. Loewenberg, P. C. Renno, W. M. Rieman, J. J. Walsh.

Kelley Company, J. W., Cleveland. Booth 12-D.
Exhibiting: Acid inhibitor for the pickle bath, and drawing compound for stainless steel, and other metal working products.
In attendance: J. W. Kelley, president; J. E. Burns, vice-president; H. B. Northrup, secretary; C. F. Boyd, H. M. Webb, E. C. Redlin, B. O. Platell, sales representatives.

Kelley-Koett Manufacturing Company, Inc., Covington, Ky. Booth 8-F.
Exhibiting: X-ray equipment for industrial enterprises; several interesting radiographs made from actual samples sent to our Research Department by firms throughout the United States will be shown; new and interesting literature pertaining to uses of X-ray in industry will also be distributed.
In attendance: J. R. Kelley, president; W. S. Werner, chief electrical engineer and secretary; C. A. Poole, industrial research engineer; E. B. Graves, electrical engineer; G. M. McFedries, manager of Chicago branch.

Kemp Manufacturing Company, C. M., Baltimore. Booth, Gas Section.
Exhibiting (in operation): Improved Kemp system for efficient utilization of gas for industrial process heating; gas fired immersion metal melting equipment; burner equipment for all types of industrial heating operations.
In attendance: E. B. Dunkak; Wm. Hunt; W. S. Bassett; and F. H. Andrews.

Continued on Page Eight

WHAT THEY WILL EXHIBIT

(Continued)

Kenworthy, Inc., Charles F., Waterbury, Conn. Booth 28-D.

Kinite Corp., Milwaukee. Booth 3-B.

Kleist, Charles and Son, Jamestown, N. Y. Booth 24-D.
Exhibiting (in operation): a miniature board hammer, and a display of drop hammer boards of the standard type; special built-up-type; laminated hammer boards and ram pins, manufactured of the highest grade of special selected hard maple lumber.
In attendance: H. E. Kleist, sales manager.

Kloster Steel Corporation, Chicago. Booth 21-Ba.
Exhibiting: Samples of "Pure-Ore" Swedish Steels of every description, including special alloy steels for the most varied purposes—chrome-nickel—chrome-vanadium—tungsten, cobalt and molybdenum steels; tool steels for all purposes; cutlery steel; hot and cold rolled strip steel; band saw steel; ball bearing steel; ball steel; razor blade steel; magnet steel; file steel; spring steel; clock spring steel; beveled shoe knife steel; knife steel; rolled figured steel; sectional steel; wire rods; rolled wire; skate steel; band iron; hollow staybolt iron; solid staybolt iron; charcoal pig iron; also Swedish Ores and other interesting things pertaining to the manufacture of high grade tool steels.
In attendance: Einar Lindeblad, general manager; and Max Weisner, sales representative.

Leeds and Northrup Company, Philadelphia. Booth 5.
Exhibiting (in operation): Demonstration of L & N Potentiometer principle, showing advantages of balance method of measuring industrial temperatures; anticipating Potentiometer control equipment; indicating and recording Potentiometer pyrometers in vapor-proof cases; recording controllers; checking Potentiometers; Hump Hardening Furnace, Homo Nitriding Furnace and Homo Tempering Furnace; model furnaces demonstrating the advantages of Hump and Homo methods.
In attendance: G. W. Tall, sales manager pyrometer division; A. E. Tarr; Jordan Korp; E. H. Carlson; W. A. Lane; T. C. Smith; J. A. Dow; H. F. Coyle; E. Bentsen; C. O. Anderson; H. Brewer, sales manager furnace division; E. B. Estabrook; P. H. Taylor; A. F. Moranty; O. Brewer; E. C. Wahl; W. D. Trueblood; R. E. Hansen; T. C. Bennett; and M. B. Fisher.

Leitz, Inc., E., New York. Booth 1-L.
Exhibiting (in operation): The new Leitz "Micro-Metallograph" advanced 1931 model will be shown for the first time in this country; this new instrument offers numerous features, namely: microscope of especially heavy design; micrometer screw protected from heat rays; ingenious optical system creating a micro-image flat to the utmost edge and serving both for visual and for photography; permanent alignment for both coarse and fine adjustment; improved illumination provided with conical and oblique light device; also exhibiting the new automatic Differential Dilatometer which registers automatically and also photographs the thermal changes of metal as they approach temperatures on the viscosity border; a new Darkfield Illuminator affording in an entirely and neat manner a means for examining metal specimens and obtaining a much clearer view into its constituents than prevailed heretofore; a complete line of grinding and polishing machines including the well-known "Guthrie-Leitz" Grinding and Polishing Machine for metallographic specimens with automatic (magnetic) specimen holder will be on display; the Leitz "Metallurscope" which serves as a portable metal microscope for both routine and research work will likewise be in active use.
In attendance: R. Tvestmann, factory superintendent; O. Soetbeer, technical representative; and A. I. Buehler, Chicago representative.

Lincoln Electric Company, Cleveland. Booth 90.
Exhibiting (in operation): A complete line of polyphase induction motors, both sleeve and ball bearings, both open and fully enclosed fan cooled; Lincoln push button starter for sizes up to motors of 30 H.P. capacity; Lincoln "Linc-Weld" motor operating under water; an Electronic Tornado Machine for carbon arc welding; this to be operating on a pipe; this demonstration being typical of all sizes of equipment in which lap, butt or edge welds are made; the weld obtainable from this type of equipment being very ductile with an elongation of 20 to 25 per cent in 2 inches and with a tensile strength of from 60,000 to 80,000 pounds per square inch; "Stable Arc" hand welding equipment in several sizes; Fleet-Weld, Stable-Arc, Light-Weld, Kathode, and Stain-Weld Electrodes; complete line of samples welded with the above electrodes.
In attendance: A. F. Davis, vice-president; R. A. Davidson, district manager, Chicago; H. M. Downing; F. O. Erickson; John C. Ardagh; H. F. Nye; and A. E. York.

Lindberg Steel Treating Company, Chicago. Booth 16-D.
Exhibiting: A booth for the entertainment of exposition visitors.
In attendance: A. N. Lindberg, president; L. A. Lindberg, vice-president and works manager; E. C. Kohler, treasurer; P. J. Norton, metallurgist; H. E. Lindberg, estimating engineer; B. C. Cleveland, sales manager.

Linde Air Products, New York. Booth 82.

Ludlum Steel Company, Watervliet and Dunkirk, New York. Booth 7-B.
Exhibiting: L-XX high speed steel, Deward, Huron, and Utica die steels, Seminole chisel steel and Pompton carbon tool steels; various applications of these steels will be illustrated by numerous tools and dies; Strauss Metal (tungsten carbide) tools will also be on display.
In attendance: A. F. Dohn, vice-president and general manager of sales; C. B. Templeton, assistant to president; F. B. Lounsberry, vice-president and manager Dunkirk plant; Harry Hardwicke, Chicago district sales manager; W. G. Zetsche, Edwin Oeser, R. E. Surtees, salesmen; and W. H. Wills, metallurgist Dunkirk plant.

Madison-Kipp Corporation, Madison, Wisconsin. Booth 1.
Exhibiting (in operation): A new size automatic die casting machine, the details of which will be announced and shown for the first time at the National Metal Exposition; also Kipp air grinders and accessories.
In attendance: A. T. Lillegren, sales manager; T. E. Coleman, president; J. A. Coleman, vice president; J. A. Courter, eastern sales manager; A. S. Kidd, superintendent; T. C. Korsmo, chief engineer die casting division; F. R. Clark, chief draftsman; R. Schultz, die casting machine expert.

Maehler Co., Paul, Chicago. Gas Section.

Mahr Manufacturing Company, Minneapolis, Minn. Booth 60.
Exhibiting: A model belt conveyor furnace as a means of displaying photographs and photostats of the more important Mahr industrial furnace installations; also the latest improved Mahr individual, direct connected blowers, and the new Mahr triple atomizing type burner, Mahr safety automatic shut off valves, and other auxiliary equipment.
In attendance: W. G. Barstow, vice-president; C. F. Olmstead, assistant sales manager; B. G. Harmon, Chicago branch manager; C. W. Rudolph, Chicago district representative; A. E. Stenzel, Detroit district representative; and A. F. Tenney, Ohio district representative.

Marburg Brothers, New York. Booth 21.
Exhibiting (in operation): A Thiel Precision Die Sawing and Filing Machine which substitutes for drilling, shipping and filing operations in making dies, jigs, punches, cams, templates, etc.; the largest size machine can do rapid sawing on material up to 5⅛ inches thick.
In attendance: Theodore H. Marburg, president; O. P. Brett; Richard Krause; and F. Wenzel.

Maxon Premix Burner Co., Muncie. Gas Section.

McGraw-Hill Publishing Company, New York. Booth 15-F.
Exhibiting: Business Publications, American Machinist; Product Engineering.
In attendance: W. E. Kennedy, manager; L. E. LeGrand, assistant editor; K. H. Condit, editor and publishing director; W. E. Irish; Ray Deen; Miss Anne LiSota; W. H. Shipman; O. Loughlin; and H. C. Stephenson.

Metal & Thermit Corp., Chicago. Booth 101.

Michiana Products Corporation, Chrobaltic Division, Michigan City, Indiana. Booth 36-B.
Exhibiting: Fire Armor heat resisting containers; carburizing and annealing boxes; cyanide, lead and salt pots; tubes and retorts; dipping baskets; Fire Armor and Zorite furnace parts, grids, muffles, rails, hearths, furnace parts and fixtures; sheets, fabricated shapes, etc.
In attendance: W. B. Sullivan, vice-president and general manager; H. Klouman, superintendent; L. H. Whiteside, Chicago representative; A. A. Cash, Detroit branch; J. F. Sweeney, New York; C. M. Conner, Philadelphia; E. E. Whiteside, Cleveland; and J. W. Mull, Jr., Indianapolis.

Michigan Steel Casting Company, Detroit. Booth 3.
Exhibiting (in operation): A model furnace demonstrating the use of Misco chain and Misco furnace parts for conveying material through heating and heat-treating furnaces; the model will also demonstrate our recommended principle of drive with counter-weighted compensators; various types of standard and special Misco chains for industrial furnace use; several designs of Misco corrugated trays for pusher furnace work; Misco seamless thermocouple protection tubes; Misco sheet carburizing boxes; Misco sheet dipping baskets and other fabricated dipping racks, fixtures, etc., Misco fixed axle type roller rail; a replaceable wearing strip (roof patented type) rolling mill twist guide with Misco insert.
In attendance: F. J. Stanley, secretary and general manager; E. D. Flinterman, sales manager; J. D. Corfield, sales engineer; Ralph T. Crean, Chicago representative; and W. E. McGahey, sales representative.

Midvale Company, Philadelphia. Booth 22-B.
Exhibiting: Forgings; heat resisting and corrosion resisting castings; tool steels.
In attendance: Dr. H. L. Frevert, vice-president in charge of operations; Stuart Hazlewood, vice-president in charge of sales; Henry Ziesing, manager of sales; Francis B. Foley, research engineer; Howard Myers, engineer of tests; A. Hamilton, engineer heat and corrosion resisting castings; H. E. Rowe, manager bar steel sales; Frank Sleath, service department; Fred Sager, manager of sales, Chicago; W. B. Smyth, manager of sales, Cleveland; Le Roy Berkey, Cincinnati; T. G. Besom, New York; and J. R. Adams, superintendent special products.

Milburn Co., Alexander, Baltimore. Gas Section.

Mill and Factory Illustrated, New York. Booth 12-F.
Exhibiting: The publication "Mill and Factory Illustrated".
In attendance: Harvey Conover, president; B. P. Mast, vice-president; and R. A. Conover.

Milne and Company, A., New York. Booth 5-B.
Exhibiting: Milne tool and die steels; hollow, solid and auger drill steels; special sections; MR Swedish Lancashire iron; Swedelac cold drawn electrical iron; Nohab anvils; forged tools; Wardlow's file steel; Wardlow's cutlery sheets; Reynold's aircraft tubing; Prince ball bearing steel; capillary tubing for Diesel engines.
In attendance: Henry Sears Hoyt, member of the firm; V. A. Greene, general sales manager; H. R. Adams, manager Chicago branch; W. McIlwrath; and Miss M. Trusten.

Minneapolis-Honeywell Regulator Company, Minneapolis. Booth 1-B.
Exhibiting (in operation): Motor operated valves for fuel-air control of industrial furnaces; damper regulating motors; motor operated automatic shut-off valves for low pressure oil and gas service; motor operated final safety shut-off valves for higher pressure application; motorized standard regulating valves; solenoid operated valves; electric contact temperature controllers; electric contact pressure controllers; combustion safety controllers; relays of small capacities; automatic thermostatic controls for unit heaters.
In attendance: R. L. Goetzenberger, manager industrial regulator department; W. G. Jennings, manager Chicago office; R. G. Taylor, industrial sales engineer, Chicago; J. E. Kelly, industrial sales engineer, Detroit; L. H. Plum, industrial sales engineer, Philadelphia; J. E. Haines, industrial sales engineer, New York; J. S. Gaines, industrial sales engineer, Milwaukee; and Paul F. Shivers, engineer, research and development.

Modern Engineering Company, St. Louis. Booth 107.
Exhibiting (in operation): Complete line of Meco Welding and Cutting Equipment; special features will be: demonstration of the Meco Multi-Seat Regulator equipped with the safety check valve; elaborate display of the type X Super Welding Torch and flame qualifications; demonstration of special machine cutting tools; the above three will be in the form of a special display and demonstration made up specially for this show.
In attendance: A. J. Fausek, president; I. F. Fausek, general sales manager; John J. Keane, territorial sales manager; Walter Smith, Chicago representative; and W. J. Lacey, merchandise manager.

Molybdenum Corp. of America, Pittsburgh. Booth 8-L.

Morse Twist Drill and Machine Company, New Bedford, Mass. Booth 31-B.
Exhibiting: Regular high speed and carbon twist drills, reamers, milling cutters, taps and dies; also various special tools.
In attendance: W. T. Read, vice-president and treasurer; F. O. Lincoln, vice-president in charge of sales; J. Gordon Barr, and B. F. Mansur.

New Jersey Zinc Company, New York. Booth 1.
Exhibiting: Zinc base die castings; this year a variety of finished products made principally of die cast parts will be shown besides an interesting exhibit of unassembled die castings; this exhibit of assembled products, including several in operation, will well illustrate the variety of finishes in which parts die cast of alloys of high grade zinc are now produced, the inherent strength of the die castings, the obvious economies of machine and assembly time.
In attendance: F. C. Fuller, manager of metal and chemical division; W. P. Hardenbergh, Jr., assistant manager metal and chemical division; R. M. Neumann, western sales manager; J. W. Matthias, assistant western sales manager; R. M. Curts; S. E. Maxon; C. R. Maxon; R. Davison; and R. L. Davis.

Northwestern Mfg. Co., Milwaukee. Booth 93.

Norton Company, Worcester, Mass. Booth 6.
Exhibiting: Alundum grinding wheels; Crystolon grinding wheels; Norton refractories.
In attendance: H. K. Clark, district manager (wheel division); R. W. Cornish, sales representative (wheel); K. H. Bird, W. H. Henson, refractories sales representatives; F. H. Stenberg, publicity department, Worcester.

Ohio Steel Foundry Company, Springfield, Ohio. Booth 26-B.
Exhibiting: A centrifugally cast alloy tube; cast and sheet Fahrite carburizing containers, centrifugal roll and other Fahrite alloy castings.
In attendance: W. J. Gilmore, vice-president; F. K. Ziegler, manager alloy division; J. F. Monfils, sales manager alloy division; D. W. Talbott, W. A. Toohill, and Frank Morrow, sales engineers.

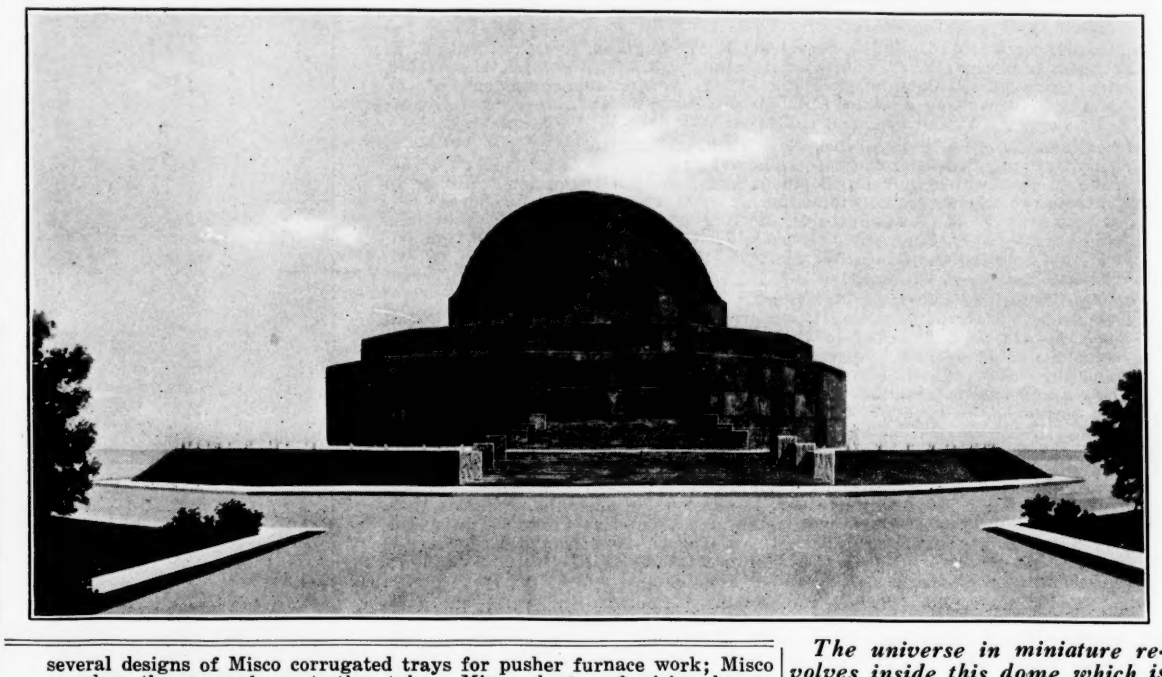
Olsen Testing Machine Company, Tinius, Philadelphia. Booth 25-B.
Exhibiting (in operation): Very latest types of Olsen Direct Motor Driven Brinell Hardness Tester; ductility testing machine equipment, for sheet metal; Universal Tensile Testing Machine with automotive drive, and which will be demonstrated with the latest types of instruments; will also demonstrate very fine rings and recent developments in testing machine equipment; will also demonstrate very latest type of Olsen-Lundgren Dynamic Balancing Machine for balancing rotating parts, as well as the Olsen-Lundgren Static Balancing Machine for balancing rotating parts statically.
In attendance: R. B. Lewis; H. H. Gildner; Bruce L. Lewis; and J. Millane.

Page Steel & Wire Co., Bridgeport. Booth 78.

Park Chemical Company, Detroit. Booth 4-B.

Continued on Page Nine

WITHIN IS A MODEL OF THE UNIVERSE



The universe in miniature revolves inside this dome which is on top of the Adler Planetarium and Astronomical Museum. Stars, planets, constellations, nebulae—all are represented in the planetarium's heaven-like show. It's located not far from the National Metal Congress Headquarters.

USERS REPORT ON TUNGSTEN CARBIDE

New Tools Still Not in Wide Use, but Proving Popular

In *Mechanical Engineering* for August, 1930, appears a preliminary report on a questionnaire submitted to users and builders of machine tools by the subcommittee on tungsten carbide cutting materials of the A.S.M.E. with the assistance of the National Machine Tool Builders Association. The report covered replies from 75 concerns.

Considerably less than one per cent of the tools in use in these shops are tungsten carbide, although one company uses such tools for 75 per cent of its cast iron turning. The report showed further that tungsten carbide is superior to carbon tool steel or high speed steel for making rough cuts on all nonferrous metals. Opinion is divided on the matter of finishing cuts, because "tungsten carbide is comparatively weak and brittle" and "will not hold a fine, keen edge." Cast iron can be readily cut by these tools, even when the surface has a hard, sandy scale. Opinion was about equally divided as to whether tungsten carbide tools were efficient for cutting steel.

Practically all standard types of machine tools except milling and drilling machines have been successfully equipped with the tools, according to the report. Most of the tools are of lathe or planer type with brazed tips. Grinding is usually done by hand. The speeds for cutting cast iron and nonferrous metals average two or three times that for high speed steels, but the same feed was used for both classes of tools.

Some remarkable increases in outputs per grind were noted. One company machined 100 to 1800 pieces of aluminum-silicon alloy per grind before tooling with tungsten carbide, which turned out 4500 to 35,000 pieces between grinds. An aircraft company turned 2000 pieces of aluminum bronze per grind with tungsten carbide as against 60 with high speed steel.

Few of the companies which answered the questionnaire reported no failures with tungsten carbide tools. One reply which was representative of several others was, "Have had the usual failures experienced by others, such as those due to tools having too great overhang, to making intermittent cuts, to operator stopping machine and starting again with feed on, to operator running machine in reverse accidentally, to not exercising care when tool leaves the work, and to encountering blowholes." Unsatisfactory tipping was given by several concerns as a cause of failure.

Among suggested improvements in machine tools to make the use of tungsten carbide tools more efficient were greater rigidity, higher permissible operating speeds, greater power, heavier and more rigid tool holders and better provision for handling chips. The operators of tungsten carbide equipped tools, the answers showed, were reluctant to return to high speed steel after becoming familiar with the tungsten carbide tools.

WHAT THEY WILL EXHIBIT

(Continued)

Exhibiting: A complete line of hardening and heat treating materials including case hardening compounds, cyanide mixtures, drawing salts, lead pot carbon, cleaning compounds, etc.
In attendance: J. N. Bourg, vice-president and general manager; F. W. Faery, Jr., and J. C. Thompson, sales representatives.

Pels & Co., Inc., Henry, N. Y. Booth 20.

Penton Publishing Co., Cleveland. Booth 25-D.

Permutit Co., New York. Booth 2.

Pittsburgh Instrument and Machine Company, Pittsburgh. Booth 24.
Exhibiting (in operation): Brinell testing machines, hand- and power-operated; metal sheet testers; metallographic grinder; Brinell calibrator; Brinell microscope; depth indicator for Brinell tests; direct reading instrument for Brinell machines; Diamo-Brinell Tester, special, with 2 millimeter steel ball and diamond indenter.
In attendance: Paul Kammerer, and Charles Trueg.

Pressed Steel Company, Wilkes Barre, Pa. Booth 44-B.
Exhibiting: Rezistal Lite-Wate carburizing and annealing containers, perforated sections; welded and seamless formed products of chrome and chrome nickel alloys; all articles shown welded by our special process.
In attendance: Chas. B. D. Wood, president; J. H. Mac Veigh, vice-president and sales manager; and F. A. Schmidt, works manager.

Production Machine Co., Greenfield. Booth 73.

Reeves Pulley Company, Columbus, Ind. Booth 8-A.
Exhibiting (in operation): The modern design of Reeves Variable Speed Transmission, incorporating a number of recent improvements and refinements; in particular, new designs of electrical remote and electrical automatic controls for the Reeves Variable Speed Transmission will be exhibited, showing the manner in which infinite variable speed regulation of any heat treating furnace of the continuous type, conveyor or machines may be adjusted infinitely in speed from one or more push button stations or, for certain installations, entirely automatically; both standard and special designs of the Reeves Variable Speed Transmission will be on display.
In attendance: C. L. Irwin; A. E. Shibley, manager Chicago branch office; C. M. Reeves, vice-president; F. T. Moore; H. M. Glessner; and E. C. Schrade.

Reintjes Co., Geo. P., Kansas City, Mo. Booth 32.

Republic Flow Meters Company, Chicago. Booth 14-B.
Exhibiting (in operation): A complete line of Republic indicating, recording and controlling pyrometers; a special feature of this exhibit will be the new Republic Control Pyrometer, Model No. 134, which will handle directly any load up to 10 K.W. without the use of auxiliary panels; also Model 135, which is a recent development in three-position control practice.
In attendance: Geo. S. Hendrickson, sales manager; Geo. D. Conlee, chief engineer; Albert Spitzglass, experimental engineer; E. Schneider; S. C. Vail; W. L. Eckdhal; and T. E. Bell.

Republic Steel Corp., Massillon, Ohio. Booth 16-B.

Riehle Bros. Testing Machine Co., Philadelphia. Booth 1-F.

Roebling's Sons, John A., Company, Trenton, N. J. Booth 102.
Exhibiting: Welding wire.

Roessler and Hasslacher Chemical Company, New York. Booth 11-B.
Exhibiting (in operation): Complete line of chemicals used in the case hardening, heat treatment, and heat coloring of steel; complete line of chemicals used in the electroplating of metals; demonstration of electroplating of copper, cadmium and zinc on steel; demonstration of a new method for the approximate determination of cyanide in case hardening baths; samples illustrating the application of electroplating and heat treatment of steel.
In attendance: Walter M. Gager, metallurgist in charge; Charles H. Proctor, electroplating expert; D. A. Holt, chemist; A. C. Stepan, sales manager Chicago office; W. Nissen; and A. Papp, Chicago.

Rustless Iron Corp. of America, New York. Booth 21-D.

Ryan, Scully & Co., Philadelphia. Gas Section.

Ryerson Co., Joseph T., Chicago. Booth 7-D.

Scherr Company, Inc., George, New York. Booth 14-L
Exhibiting (in operation): A complete line of optical precision measuring instruments and tools, featuring: a new contour measuring projector; a new model of toolmakers microscope; a new measuring microscope; an optical dividing head; a new optical division checking device; an optical precision length measuring machine; a universal measuring and locating microscope.
In attendance: George Scherr; Fritz Konig; and R. P. Friis.

Selas Company, Philadelphia. Booth, Gas Section.
Exhibiting (in operation): Selas air and gas mixing machines and compressors; Selas valves; industrial burners; blow torches; soldering irons.
In attendance: F. Hess, manager.

Shakeproof Lock Washer Company, Chicago. Booth 10-L.
See: Illinois Tool Works.

Shore Instrument and Manufacturing Company, Jamaica, N. Y. Booth 14-D
Exhibiting (in operation): Improved Monotron; Model C-2 Scleroscope; Model "D" Scleroscope; Durometer and Elastometer (rubber testing instruments); Localcase and Localhard (for heat treating steel).
In attendance: F. G. Kendall, sales manager; and B. C. Cleveland, central western representative.

Southern Manganese Steel Co., St. Louis. Booth 28.

Southwark Foundry & Machine Co., Philadelphia. Booth 41-B.

Spencer Turbine Company, Hartford. Booth 75.
Exhibiting (in operation): Spencer Turbo-compressors, which are used for supplying air in connection with oil and gas burning industrial furnaces, foundry cupolas, etc.; a 15 H.P. machine will be operating to deliver air for any furnaces in operation during the show; also a 5 H.P. machine with casing and end-heads made up of stainless steel (KA-2) and impellors of duralumin, capable of handling injurious gases and acid fumes.
In attendance: A. W. Peard, western manager; F. A. Wright, special representative; and R. A. Brackett, sales department.

Standard Alloy Company, Inc., Cleveland. Booth 30-D.
Exhibiting: Standard Alloy beams, rails, and miscellaneous parts for normalizing and pack heating and pair heating furnaces; roller hearth discs, and spacers; insulated shaft assembly for normalizers; enameling burning racks; chain grate castings for heat resisting service; furnace trays and shoes; roller rails; skid rails and shoes; pump casings and impellers; furnace parts and miscellaneous heat and acid resisting castings covering in general the heat treating and chemical field; also return bends elbows and fittings for use in the oil industry.

Continued on Page Ten

HOTEL RESERVATION BLANK

National Metal Congress and Exposition
Chicago, Ill., September 22-26, 1930.

Hotel Stevens,
Michigan Blvd.,
Chicago, Ill.

Please reserve the following accommodations as checked:

	$3.00		$ 4.50		$ 6.00
	3.50		5.00	Double Room	7.00
	4.00	Double Room	6.00	Twin Beds	8.00
Single Room	5.00	Double Bed	7.00	Bath	9.00
Bath	6.00	Bath	9.00		10.00
	7.00		10.00		15.00
	8.00				

Date and hour of arrival .....

To be occupied by .....

.....

Name .....

Address .....

"METAL PROGRESS" TELLS METAL TALES

October Number Will Describe Zinc, Gold, Steel, Aluminum

All stories in *Metal Progress* for October have one common denominator, metal, but no two are alike in any other way. Even the denominator is subdivided into separate metals such as zinc, gold, steel and aluminum.

The October *Metal Progress* will have stories about all these metals. One will tell about the steels and methods used in making fine springs that run watches, keep Rudy Vallee records revolving on phonographs and work hidden in automobile cylinder heads.

Did you ever ride an aluminum street car? Perhaps not, but you probably will some day, for a lot of work is being done to cut down excess weight in the rolling stock of street railways and steam roads. *Metal Progress* has a story about aluminum cars written by a man who is metallurgist for the company that builds them.

Platinum is a metal favored now by buyers of fine jewelry, but before it can be fashioned into rings, brooches or necklaces this already expensive metal must be alloyed with another metal whose cost far exceeds its own. An excellently illustrated story will tell *Metal Progress* readers why, and will describe other alloys used by jewelers.

The progress of nitriding from a laboratory experiment to an accepted commercial steel treatment is traced, step by step, in an article written by one of the real authorities on the nitriding of steel.

Employment Service Bureau

This bureau is for all members of the Society. Want ads will be printed at the following rates: minimum of 30 words $0.50; each additional word $0.02.

This service is also for employers, whether members of the Society or not. Rates for this service are as follows: minimum of 50 words $1.00; each additional word $0.02. Fee must accompany copy.

Address answers care of AMERICAN SOCIETY FOR STEEL TREATING, 7016 Euclid Ave., Cleveland, unless otherwise stated.

POSITIONS WANTED

HEAT TREATER: with 14 years practical heat treating, carburizing and cyanide hardening experience in a large automobile factory, last 7 years as assistant foreman, desires position as heat treating foreman in the middle west. Address 9-15.

ELECTRIC STEEL MELTER, desires to change position. Maker of plain and alloy steels, including noncorrosive, acid and basic, wants position as foreman or melter with possibility to advance. Address 8-5.

POSITION WANTED: 22 years experience in heat treating alloy steels and hardening all kinds of steel. Was connected with heat treatment department of large tractor manufacturer for 10 years and that of automobile manufacturing concern for 4 years. Address 8-15.

TOOL STEEL SALESMAN is open for engagement August 1st. Experience in heat treatment of tool steels, nitriding steel and machine shop practice. Fully conversant with requirements of Connecticut consumers. Address 9-5.

METALLURGIST-CHEMIST: Age 38, married, college graduate. Experience covers machine tool, automotive, aeronautic lines. Qualified for executive position. Experience covers heat treating, chemical and phyical testing, metallography, ferrous and nonferrous metals. Available immediately. Address 7-35.

WELDER: Fully experienced in electric resistance welding. Desires opening as organizer and supervisor of welding department with firm desirous of improving their manufacturing methods. Past experience covers heat treatment, microscopic work, mechanical testing, besides welding. Qualified to lead men. Would go abroad. Address 9-10.

POSITIONS OPEN

TOOL STEEL SALESMAN for Chicago, Detroit or Cleveland territory. Must have selling experience. One with metallurgical, heat treating or machine shop experience preferred. State age, married or single, past and present employers, experience in full, phone number. Address 6-25.

FOR SALE: Leitz Micro-Metallograph

An opportunity now prevails to purchase at an attractive price, a Leitz "Micro-Metallograph," complete with accessories, in perfect condition.

Address 9-30.

WHAT THEY WILL EXHIBIT

(Continued)

In attendance: Harvey M. Smith, sales manager; Frank F. Jackson, superintendent; Emerson M. Williams, secretary; W. D. Mann, manager Providence office; George S. McFarland, Columbus office; A. D. Darragh, New York representative; Wm. M. Titzel, Chicago representative; and Wharton L. Peters, St. Louis representative.

Steel City Testing Laboratory, Detroit. Booth 41-B.

Exhibiting (in operation): Power operated Brinell testing machine, type 03, for production testing, with foot pedal operation giving operator use of both hands for handling specimens and direct reading attachment; type R-3 sheet metal tester, testing sheets up to ⅛" in thickness and also ¼" in thickness; this type of apparatus can be supplied with tensile testing attachment and autographic recorder; type P hardness testing hammer, portable apparatus for testing large specimens, smaller type for testing small specimens; Electro Magnetic Crack Detector for detecting cracks in steel and iron parts for autos, busses, railroad rolling stock, machinery, etc.; type transverse tester for testing transverse strength of castings and bending qualities of various materials, this machine is hydraulic; style A standard hand-operated Brinell testing machine.

Steel Publications, Inc., Pittsburgh. Booth 99.

Exhibiting: *Heat Treating and Forging; Blast Furnace and Steel Plant; Welding; Directory of Iron and Steel Plants; Heat Treating and Forging Directory.*

In attendance: D. N. Watkins, president; D. S. Watkins, vice-president; M. M. Zeder, secretary and treasurer; Chas. Longenecker, managing editor; L. R. Gurley, editor, *Welding;* G. H. Haynes, business manager, *Heat Treating and Forging;* G. P. Grant, western manager; R. E. Powell, eastern manager; and H. D. Brewer, circulation representative.

Stoody Company, Whittier, Cal. Booth 103.

Exhibiting: Photographic and actual sample display of welded-on overlays made from alloy welding rods.

In attendance: Miles C. Smith, manager sales promotion; J. C. Blake, general sales manager; C. E. Phillips, president, C. E. Phillips and Company, Detroit and Chicago; and C. P. Konton, Chicago representative, C. E. Phillips and Company.

Strong, Carlisle and Hammond Company, Cleveland. Booth 34.

Exhibiting (in operation): Type 55 S. C. & H. Heavy Duty High School Steel Hardening Furnace arranged for 530 B. T. U. gas with McKee Mixer for single valve hand control; No. 1002 Spencer Turbo Compressor with 3 phase, 60 cycle, 220 volt motor and hand starter and No. 1 discharge; a number of furnace photographs; a small miscellaneous exhibit of furnace parts; circulars and catalogs.

In attendance: R. P. Bethke, A. B. Lindsay, Jacob Weintz, F. C. Parsons, sales engineers; Chas. Klaue, sales representative; Fred Leopold, furnace operator; G. S. Peterson, manager furnace department.

Stuart & Co., D. A., Chicago. Booth 4-D.

Surface Combustion Co., Inc., Toledo. Gas Section.

Taylor-Winfield Corporation, Warren, Ohio. Booth 94.

Exhibiting (in operation): Both butt welding and spot welding machines which are incorporating some new features that will be shown for the first time at this convention.

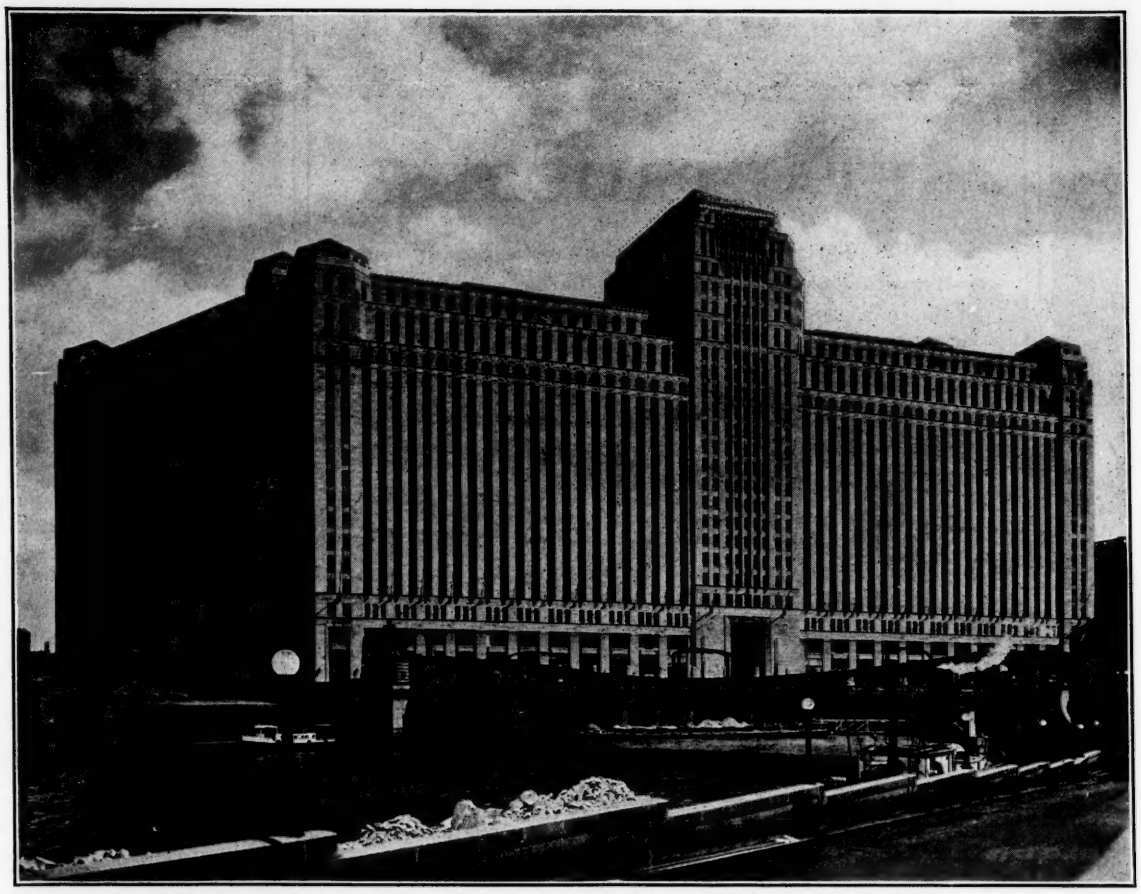
In attendance: J. A. Anderson, president, Denton and Anderson Company; W. A. Anderson, vice-president, in charge of sales of the Denton and Anderson Company; George E. King, manager of Chicago district office, Denton and Anderson Company; C. T. Marsh, service engineer; C. A. Gould; and C. G. Bassler.

Thomson-Gibb Electric Welding Company, Lynn, Mass., and Bay City, Michigan. Booth 97.

WHERE TUNNEY WAS DOWN FOURTEEN

Made famous by the "long count," the Army football team and many another sporting event is Soldiers' Field, Chicago's stadium. In the left background can be seen the Hotel Stevens, headquarters for the National Metal Congress and Exposition.

THE MERCHANDISE MART, RECENTLY BUILT



"Huge," "massive," "colossal" are only a few of the adjectives which have preceded the name of the Merchandise Mart whose bulk completely fills this picture which was taken at a considerable distance from the building. This building is well worth a visit while you are in Chicago.

Exhibiting (in operation): New style heavy duty air operated double roll type of seam welder; latest design of welding press; improved medium duty butt welder; two small standard spot welders; display of representative samples of welded products.

In attendance: W. H. Gibb, vice-president; C. E. Shearer, assistant to vice-president; C. O. Watson, manager Chicago district office; R. B. Strout, Chicago district office; R. L. Browne, manager Albany district office; A. E. Hackett, manager Detroit district office; D. A. Clements, St. Louis district office; P. B. Hall, Indianapolis representative; C. K. Stone, Minneapolis representative; and G. K. McMullen, Grand Rapids representative.

Timken Steel and Tube Company, Canton, Ohio. Booth 1-D.

Exhibiting: A display of various sizes of bars and other shapes as well as an assortment of seamless tubing, all of which are manufactured by our company.

In attendance: M. T. Lothrop, president; J. W. Spray, vice-president; A. J. Sanford, vice-president in charge of sales; E. F. Talmadge, Chicago office; Robert Atkinson, Detroit office; S. D. Williams, Canton office; and W. G. Hildorf, metallurgist.

Trent Co., Harold E., Philadelphia. Booth 36.

Una Welding and Bonding Company, Cleveland. Booth 105.

Exhibiting (in operation): Una Welders, both AC-DC and DC-DC types; these welders are available both as single or double operator machines; the new Una Semi-Automatic Welding Unit will be shown and operated; also the Una Full-Automatic Arc Welding Head; the complete line of Una Welding Rods will be exhibited for manual and automatic welding; these include rods for a wide range of ferrous and non-ferrous welding; several new rods of special interest will be shown, including No. 911 for welding stainless steel.

In attendance: E. W. Kronbach; A. A. Probeck; L. R. Berkeley; L. S. Burgett; and J. B. Austin.

Vanadium-Alloys Steel Company, Latrobe, Pa. Booth 24-B.

Vanadium Corporation of America, New York. Booth 9-F.

Exhibiting: Ferro-vanadium; ferro-chromium; ferro-silicon; ferro-titanium; alsifer; specimens of vanadium steel applications, such as automobile parts, airplane engine parts, railroad and automobile springs, tools, etc.

In attendance: B. D. Saklatwalla, vice-president; G. L. Norris, chief metallurgical engineer; H. T. Chandler, assistant to the president; Jerome Strauss, chief research engineer; J. A. Miller, general manager of sales; C. B. Woodworth, manager western division; Walter Smith, assistant manager western division; C. N. Dawe, manager automobile division; T. Bourke, assistant manager automobile division; A. W. Demmler, metallurgist.

Vulcan Crucible Steel Company, Aliquippa, Pa. Booth 10-B.

Exhibiting: High speed, alloy, and carbon tool steels, and special steels.

In attendance: S. G. Stafford, president; R. M. Kelso; A. D. Beeken, Jr.; S. B. Minton; E. H. Lurker, Chicago branch manager; O. H. Beall, Chicago; and E. V. Hobson, Chicago.

Weaver Brothers Company, Adrian, Michigan. Booth 29-B.

Exhibiting (in operation): Complete pickling room display showing application of methods to control temperature and acid concentration of the pickling solutions; equipment shown is of the type which assures the most economical operation of the pickling department.

In attendance: J. C. Weaver, vice president; D. E. Stamm, chemist; H. E. Rose, secretary.

Wedge Lock Tool Company, Chicago. Booth 10-L.

See: Illinois Tool Works.

Welding Engineer Publishing Company, Chicago. Booth 72.

Exhibiting: Magazines, books and educational matter pertaining to welding.

In attendance: H. S. Card, editor; F. L. Spangler, associate editor; L. C. Monroe, central states representative; and T. E. DePew, eastern manager.

Wheeling Mold & Foundry Co., Wheeling. Booth 61.

Wheelock, Lovejoy and Company, Inc., Cambridge, Mass. Booth 8-D.

Exhibiting: Replicas of warehouses, heat treating and forging plants, as well as an exhibit of special parts showing interesting applications of various Hy-Ten Alloy Steel compositions.

In attendance: A. O. Fulton, president; F. H. Lovejoy, vice-president; S. W. Parker, Chicago manager; A. R. Townsend, F. J. DeVan, and H. A. Bischoff, Chicago sales organization.

Westinghouse Electric and Manufacturing Company, East Pittsburgh. Booth 76.

Exhibiting (in operation): Portable, 200 and 400 ampere, Flex-Arc, single operator welding units; automatic seam welder equipped with Weldomatic Head to demonstrate automatic welding of longitudinal seams; the 200 and 400 ampere, single operator units will also be used to demonstrate Flex-Arc welding electrodes; also views of electric furnace installations in the metal industry.

In attendance: W. W. Reddie, section head arc welding sales; W. C. Pearson, welding specialist; northwestern district; G. H. Koch, welding engineer; T. C. Kelley, section head industrial heating, Mansfield; C. W. Babcock, Boston; H. C. Bostwick, New York; J. W. Allison, Philadelphia; J. F. Baker, Pittsburgh; T. J. James, Cleveland; W. C. Stevens, Detroit; J. Mixsell, J. H. Germany, M. S. Boreen, J. C. Woodson, C. H. Carpenter, R. H. Allen, W. Roth, O. A. Colby, F. Kerin, of Mansfield.

Whitman and Barnes, Incorporated, Detroit. Booth 4.

Exhibiting (in operation): A large drill press which will demonstrate the use of the new Hercules Major drill by drilling 11% to 13% manganese steel test blocks; drills of different diameters will be used during the demonstration; this drill is especially designed and made for drilling high manganese steel on a production basis; also a punch press, which will be run on a production piercing job; this press will be fitted with a die completely equipped with the new Hercules interchangeable punches and retainers; this exhibit will show the interchangeable merits and stripping strength of the Hercules interchangeable punches and retainers under actual production conditions.

In attendance: E. D. Wolf, assistant sales manager; R. O. McGraw, assistant sales manager; F. T. Harrington, chief engineer; W. R. Breeler, metallurgist; M. J. Kearins, manager Chicago office; H. D. Strelluf, salesman.

Wickwire Spencer Steel Company, New York. Booth 74.

Exhibiting (in operation): A model of a furnace, showing the operation of Wisscoloy spirally woven conveyor belt, such as is used in continuous heat treating furnaces up to 1800 degrees Fahr.; belts of similar construction, made of soft steel in special designs, used for conveyors from quench tanks and other purposes where the economical handling of material under severe conditions is required; Wissco oil tempered spiral, helical, torsion and flat springs will be shown and a torsion fatigue testing machine will demonstrate the resistance to fatigue of Wissco valve spring wire.

In atendance: M. G. Werme; O. C. Ploss; V. C. King; E. F. Early; R. R. Tatnall; F. J. Connor; J. R. Worsfold, sales manager; F. W. Hale, department sales manager; C. R. Coffeen; and M. A. Bloomquist.

Young Brothers Company, Detroit. Booth, Gas Section.

Exhibiting: One experimental oven, direct gas heated, with automatic control, and equipped with internal recirculating system; one truck type oven, equipped with a combination of direct, indirect, and remote gas heat, featuring different types of controls and safety appliances.

In attendance: R. B. Reed, sales manager; C. G. Lisch, assistant sales manager; V. A. Fox, chief engineer; and T. P. McVicker, Chicago m nager.

Ziv Steel & Wire, Chicago. Booth 17-B.

F. J. CONDIT NOW IN BUFFALO

F. J. Condit has been appointed as resident engineer in Buffalo, N. Y., by the Hevi Duty Electric Co., Milwaukee. Condit, who is a member of the A.S. S.T., was formerly in the General Offices at Milwaukee.

L. and N. Bulletin 880 describes a new Relative Humidity Recorder which records directly. The bulletin may be obtained by writing the Leeds and Northrup Co., 4901 Stenton Ave., Philadelphia.

A.S.M.E. TECHNICAL PROGRAM READY FOR METAL CONGRESS

The Iron and Steel and Machine Shop Practice Divisions of the American Society of Mechanical Engineers will sponsor this program during the National Metal Congress:

Tuesday, Sept. 23—2 P. M.

Phenol Resinoid Molding Technique—Consideration of Engineering Factors Involved in the Replacement of Metals by Synthetic Plastics—Leon V. Quigley, Bakelite Co., New York.

Production of Plastic Telephone Parts—A. M. Lynn, Western Electric Co., Chicago.

8 P. M.

Flange Type Motor Mounting—Herbert Chase, McGraw-Hill Publishing Co., New York.

Mechanical Design of Electric Motors, as Regards Standardization and Interchangeability—J. L. Browne, Westinghouse Electric & Mfg. Co., East Pittsburgh.

Wednesday, Sept. 24—10 A. M.

Automatic Polishing—Robert T. Kent, Devine Bros., Utica, N. Y.

Repair of Worn Parts by Electro Deposition of Iron—T. P. Thomas, Westinghouse Electric & Mfg. Co., East Pittsburgh.

2 P. M.

Case Hardening with Ammonia Gas—V. O. Homerberg and J. P. Walsted, Massachusetts Institute of Technology, Cambridge.

Nitriding Analyses—Their Physical Properties and Adaptability—R. Sergeson and M. M. Clark, Central Alloy Steel Co., Canton, Ohio.

Thursday, Sept. 25—10 A. M.

Report of Anti Friction Heavy Duty Bearing Committee.

General Design and Construction of Hot Saws for Cutting Heavy Structural Steel Sections—A. B. Pearson, Carnegie Steel Co., Munhall, Pa.

2 P. M.

Manufacture of Large Weldless Forged Steel Pressure Vessels—J. L. Cox, Midvale Co., Philadelphia.

Manufacture of Large Welded Pipe—Leon Cammen, Consulting Engineer, New York.

Straightening of Steel by Rolling—J. Blair Sutton, Sutton Engineering Co., Pittsburgh.

Friday, Sept. 25—10 A. M.

Application of Metallic Recuperators to Industrial Furnaces—G. W. Mantle, Surface Combustion Co., Pittsburgh.

Continuous Reheating Furnaces for Rolling Mills—A. L. Culbertson, Rust Engineering Co., Pittsburgh.

Manual Semi-Automatic Devices for the Protection Against Wind of Ore Bridges and Similar Structures—C. O. Burton, Minnesota Steel Co., Duluth, Minn.

2 P. M.

Notes on the Production, Purification and Uses of Blast Furnace Gases—Wm. A. Haven, Arthur G. McKee Co., Cleveland.

Combustion of Gas in Blast Furnace Stoves—H. W. Paret, Jr., Swindell-Dressler Co., Pittsburgh.

AMERICAN WELDING SOCIETY ANNOUNCES VARIED PROGRAM

The technical program arranged by the American Welding Society for its sessions during the National Metal Congress in Chicago lists a wide range of subjects presented by authorities. The complete program follows:

MONDAY, SEPTEMBER 22

Afternoon

Structural Steel Welding Committee
American Bureau of Welding

J. H. Edwards, chairman, presiding.
Meeting of Structural Steel Welding Committee.
C. A. Adams, director, presiding.
Meeting of American Bureau of Welding.

Evening

Dinner meeting of Board of Directors, American Welding Society.

TUESDAY, SEPTEMBER 23

Morning

E. A. Doyle, president, presiding.

A few introductory remarks by President Doyle and transaction of any formal business and introduction of local celebrities and the keynote speaker.

Afternoon

F. T. Llewellyn, past president, presiding.

The Examination of Welds by the X-Ray Diffraction Method, by J. T. Norton, Massachusetts Institute of Technology.

Fatigue Investigations of Welded Joints, by G. E. Thornton, State College of Washington.

Stress Distribution in Side-Welded Joints, by Walter H. Weiskopf and Milton Male.

WEDNESDAY, SEPTEMBER 24

Morning

E. A. Doyle, president, presiding.

Resistance Welding of Bar Joists, by Frank Burton, Steel Joist Institute.

Cost of Using Welding, by Robert E. Kinkead, consulting engineer.

Strength of Welded Joints in Tubular Members for Aircraft, by H. L. Whittemore, U. S. Bureau of Standards.

Afternoon

Symposium on Testing of Welds, H. L. Whittemore, member Committee on Standard Tests for Welds, presiding.

1. Introduction and Suggested Revision of ABW Bulletin No. 1 by ABW Committee on Standard Tests for Welds.
2. *Tensile Tests for Welds*—J. W. Owens.
3. *Bend Tests for Welds*—W. B. Miller.
4. *Shear Tests for Welds*—Andrew Vogel.
5. *Fatigue and Impact Tests for Welds*—C. H. Jennings.
6. *Testing of Welds*, by Gilbert E. Doan, Lehigh University.

THURSDAY, SEPTEMBER 25

Morning

A. G. Oehler, past president, presiding.

Double Lengthening Railroad Rails, by L. C. Ryan, manager, Track Dept., Oxweld Railroad Service Company.

Possibilities of the Further Development of Railroad Welding, by G. W. Lieber, Supt. of Reclamation, Missouri-Kansas-Texas Railroad Company.

Reclamation of Battered and Worn Ends of Railroad Track, by W. H. Kirkbride, Engineer of Maintenance of Way and Structures, Southern Pacific Company.

Elimination of Joint in Open Track, by J. H. Deppeler, Chief Engineer, Metal and Thermit Corporation.

Afternoon

TECHNICAL SESSION

F. P. McKibben, vice-president, presiding.

Developments in Pressure Vessel Welding, by J. C. Hodge, Babcock & Wilcox Company.

Welded Steel Tubing, by J. S. Adelson, Steel & Tubes, Inc.

Magnetic Testing of Butt Welds, by T. R. Watts, Westinghouse Electric & Manufacturing Company, Research Laboratory.

FRIDAY, SEPTEMBER 26

Morning

J. J. Crowe, Member of Executive Committee, presiding.

Welding of Stainless Steel, by L. W. Hostettler, Allegheny Steel Company.

Arc Welding of Aluminum, by W. M. Dunlap, (Aluminum Research Laboratories) Aluminum Company of America.

Oxy-Acetylene Welding of Corrosion Resisting Steels, by W. B. Miller, Union Carbide and Carbon Research Labs.

A. S. S. T. BOOKS GET HEARTY APPROVAL

All Deal with Metals; Some Educational; Others Deeper

Hearty approval of the metallurgical books published by the American Society for Steel Treating has been evidenced by men in the metals industries in all parts of the world. Some of the volumes have been frankly educational in character; others have gone more deeply into their respective subjects.

"Lectures on Steel and Its Treatment", by John F. Keller of Purdue University, is the title of a book which pictures clearly the mechanics and discusses somewhat the theoretical side of the various steel treatments. The book, attractively bound, sells for $3.50.

H. B. Knowlton, International Harvester Co., Fort Wayne, is the author of a book "Heat Treatment, Uses and Properties of Steel", which discusses carbon and alloy steels from those points of view. The volume, which contains 437 pages, costs $4.50.

At the 1929 National Metal Congress two sessions were devoted to a nitriding symposium to which leading authorities on the subject contributed. Their papers, together with discussion, were reprinted in a bound form which is available at $3.00. The metallurgical staff of the U. S. Bureau of Standards collaborated in preparing a volume on "The Principles of the Heat Treatment of Steel," which is available at $1.50, cloth bound; $1.00 in paper.

Dr. W. H. Hatfield, of the Brown-Firth Research Laboratories in England, delivered the Campbell Memorial Lecture before the Society in 1928. His talk, "The Application of Science to the Steel Industry", proved so informing that it was also reprinted. Copies may be obtained for $2.50.

Dr. C. R. Wohrman received the Howe Medal of the A. S. S. T. in 1928 for his investigations into inclusions in iron. These investigations were originally published in the Society's TRANSACTIONS, but because of their great value to science they were republished in book form. The volume costs $3.00.

Two very recent books published by the A. S. S. T. are "Steel and Cast Iron, Their Constitution and Heat Treatment" and "Study of the Quenching of Steel". Frank T. Sisco of the Engineering Foundation wrote the former book to explain clearly the constitution of ferrous metals. H. J. French of the International Nickel Co. is the author of the volume on quenching. The books sell for $3.00 and $2.50 respectively.

The *National Metals Handbook* is a compendium of information useful to all engaged in work with iron, steel or nonferrous metals. Recommended practices are given for the common heat treatments, and general data are published on other topics related to metals. A copy of the *Metals Handbook* costs $10.00 and carries with it the privilege of purchasing a copy of succeeding editions, issued every two years, for $5.00.

Copies of any of these books may be ordered through the American Society for Steel Treating, 7016 Euclid Ave., Cleveland, Ohio.

MASTER BLACKSMITHS MEET AT TIME OF METAL CONGRESS

Headquarters at Morrison Hotel

The 34th convention of the International Railroad Master Blacksmiths' Association will be held in Chicago at the Morrison Hotel, Sept. 23-25, in conjunction with the National Metal Congress and Exposition. Technical and business sessions are included on the program.

The technical sessions include papers on autogenous welding, heat treatment of carbon and high speed steel, drop and machine forging and tools and formers, spring making and repairing, reclamation and safety first.

J. P. Reid, Kansas City, Mo., is president of the I. R. M. B. A.; R. F. Scott, Shillington, Pa., is 1st vice president; W. J. Wiggin, North Bellerica, Mass., is 2nd vice president; George Hutton, Albany, N. Y., is chairman of the executive committee, and W. J. Mayer, Detroit, is secretary-treasurer.

The Blacksmiths' Supply Association, headed by Edwin T. Jackman of Chicago, will meet at the same time. Other officers of this organization are W. A. Champieux, vice president, and J. H. Jones, secretary and treasurer.

LOW JOINS KING REFRACTORIES CO.

Frederick H. Low, well known in the field of plant engineering development, has become associated with the King Refractories Co., of Buffalo, as secretary and general manager.

A.I.M.E. DIVISIONS' PROGRAM READY FOR CHICAGO MEETING

Programs of technical papers will be sponsored by both the Institute of Metals and the Iron and Steel divisions of the American Institute of Mining and Metallurgical Engineers. The combined program:

Monday, September 22

10:00 a. m. Iron Ore Session
Iron and Steel Division.
W. J. MacKenzie, Chairman
C. E. Williams, Vice-chairman.

Some Aspects of the Iron Ore Situation. By F. B. Richards. (M & M).

Beneficiation of Iron Ores from the Blast Furnace Viewpoint. By Ralph Sweetser. (M & M).

Resistance of Iron Ores to Decrepitation and Mechanical Work. By T. L. Joseph and E. P. Barrett.

2:00 p. m. Iron Ore Round Table
Iron and Steel Division.
C. B. Murray, Chairman
T. L. Joseph, Vice-chairman.

Tuesday, September 23

10:00 a. m. Hotel Stevens, South Ball Room. A. I. M. E. members are invited to attend A. S. S. T. session on "Salesmanship".

2:00 p. m. Joint Session on Theoretical Metallurgy, Institute of Metals and Iron and Steel Divisions.
S. L. Hoyt, Chairman
M. A. Grossmann, Vice-chairman.

Studies upon the Widmanstatten. I. Introduction. The Aluminum-silver System and the Copper-silicon System. By Robert F. Mehl and Charles S. Barrett. (T. P. 353).

Cemented Tungsten Carbide. By L. L. Wyman and F. C. Kelley. (T. P. 354).

Transformation of Austenite at Constant Subcritical Temperatures. By E. S. Davenport and E. C. Bain. (T. P. 348).

6:30 p. m. Joint Dinner of Institute of Metals and Iron and Steel Divisions. (Informal. Ladies invited).

Dr. B. D. Saklatwalla, Vice President, Vanadium Corporation of America, will give a non-technical talk on *Vanadium.*

Wednesday, September 24

2:00 p. m. General Technical Session
Institute of Metals Division.
W. R. Webster, Chairman
R. S. Dean, Vice-chairman.

Influence of Casting Practice on the Physical Properties of Die Castings. By Charles Pack. (T. P. 346).

Effect of Certain Alloying Elements on Structure and Hardness of Aluminum Bronze. By Selma F. Hermann and Frank T. Sisco. (T. P. 365).

Thermal Conductivity of Copper Alloys. Part II. *Copper-tin Alloys.* Part III. *Copper-phosphorus Alloys.* By Cyril Stanley Smith. (T. P. 360).

Application of X-Rays to Development Problems Connected with the Manufacture of Telephone Apparatus. By M. Baeyertz. (T. P. 349).

Thursday, September 25

8:00 a. m. Nonferrous Metal Plant Visitations.

10:00 a. m. Alloys Session
Iron and Steel Division
Jerome Strauss, Chairman
A. B. Kinzel, Vice-chairman.

Practical Observations on the Manufacture of Basic Open-hearth, High-Carbon Killed Steel. By W. J. Regan. (T. P. 347).

Development of Casings for Deep Wells. By F. W. Bremmer. (T. P. 355).

Manufacture of Basic Open-hearth Steel of Forging Quality. By William R. Fleming.

2:00 p. m. Aluminum Session
Institute of Metals Division.
H. W. Gillett, Chairman
H. S. Rawdon, Vice-chairman.

Constituents of Aluminum-iron-silicon Alloys. By William L. Fink and Kent R. Van Horn. (T. P. 351).

Aluminum-silicon-magnesium Casting Alloys. By R. S. Archer and L. W. Kempf. (T. P. 352).

Equilibrium Relations in Aluminum-antimony Alloys of High Purity. By E. H. Dix, Jr., F. Keller and L. A. Willey. (T. P. 356)

Equilibrium Relations in Aluminum-magnesium Silicide Alloys of High Purity. By E. H. Dix, Jr., F. Keller and R. W. Graham. (T. P. 357)

Modulus of Elasticity of Aluminum Alloys. By R. L. Templin and D. A. Paul. (T. P. 366)

Quenching of Alclad Sheet in Oil. By H. C. Knerr.

Experiments on Retarding the Age Hardening of Duralumin. By E. H. Dix, Jr., and F. Keller.

THIS ADMITS TO EXPOSITION

Below is a reproduction of the official guest ticket of admittance to the National Metal Exposition in Chicago the week of Sept. 22, 1930. The ticket printed here will be accepted at the doors of the Exposition.

Members of co-operating societies will be admitted to the Exposition throughout the week by showing registration badges; no ticket is necessary.

ADMIT ONE
EXHIBITION HALL SECTION
NATIONAL METAL EXPOSITION
Participating Societies
A. S. S. T.—A. W. S.—I. of M.
A. I. M. E.—A. S. M. E.
STEVENS HOTEL—CHICAGO
September 22, 23, 24, 25 or 26

ADMIT ONE
SECOND FLOOR SECTION
NATIONAL METAL EXPOSITION
Participating Societies
A. S. S. T.—A. W. S.—I. of M.
A. I. M. E.—A. S. M. E.
STEVENS HOTEL—CHICAGO
September 22, 23, 24, 25 or 26

See reverse side for hours of Exposition

Compliments of
AMERICAN SOCIETY FOR STEEL TREATING

You are cordially invited to attend the National Metal Exposition at the Stevens Hotel, Chicago, and see in operation all of the best and latest appliances used in the metal industry.

EXHIBIT HOURS:

Monday— 10:00 A. M. to 6:00 P. M.
Tuesday— 12:00 Noon to 10:00 P. M.
Wednesday—10:00 A. M. to 6:00 P. M.
Thursday— 10:00 A. M. to 6:00 P. M.
Friday— 12:00 Noon to 10:00 P. M.

(See other side)

SEVERE TESTS MADE ON BEARING METALS

Bureau of Standards Men Find Effect of Alloys on Service

Bearing metals cannot be made wholly from new or virgin metals with economy, for the high value of copper, tin and lead makes the reclamation of unserviceable metals desirable. Secondary metals vary not only in the proportions of these metals but also in the percentages of various other elements such as zinc, phosphorus, antimony, and nickel, and therefore, a study of the effects of these elements is advantageous both to the consumer and manufacturer.

Such an investigation was made at the U. S. Bureau of Standards by R. L. Dowdell, senior metallurgist of the bureau, and two research men for the Bunting Brass and Bronze Co. Their results were published in the S.A.E. *Journal* for July.

Several base alloys of copper, tin, and lead were first tested for wear resistance, frictional force, resistance to pounding and impact, and hardness. When 4 per cent zinc was added to these alloys no appreciable effects on the wear resistance or frictional effect were noted; the alloys were more resistant to pounding when at 70 deg. Fahr., but no more resistant at either 350 or 600 deg. Fahr. Their resistance to impact as measured by the Izod method was the same for all temperatures. Finally, their Brinell hardness was slightly increased by heating.

Similar tests were made to the same base alloys after 0.05 per cent phosphorus was added. It was found that the wear resistance was increased and the frictional force was unaffected. Resistance to pounding at 70 deg. was increased, though this resistance decreased at higher temperatures, being the same as that of the base alloy at 350 deg. and showing a marked decrease at 600 deg. No definite change in resistance to wear was noted. The phosphorus-bearing alloys were slightly harder than the base metal.

Additions of 2 per cent nickel to the base alloys brought generally lower wear resistances, and slightly increased frictional force. Resistance to pounding was greatly increased at 70 deg. Fahr. The Izod test showed a higher impact resistance for the alloys low in lead, but lower resistance for greater lead contents. Hardness remained about the same in all cases.

One per cent antimony was also added to the original base alloys. Wear resistance was increased as was friction, although the latter was not so noticeable at higher than room temperatures. The resistance to pounding was greater for the antimony-bearing metal at all test temperatures, but the Izod results were about 30 per cent lower. In most cases the alloys were slightly harder.

FAIR TO REPRODUCE OLD BLAST FURNACE

Chicago World Fair Committee Names Ohio Stack as Oldest

The first American blast furnace, built at Youngstown, Ohio, in 1835, is likely to be reproduced at the Chicago World's Fair in 1933 as one of the science exhibits commemorating the virtual founding of the iron and steel industry in this country.

This is the recommendation of George B. Garrett, Cleveland engineer, in a report compiled by the iron and steel section of the National Research Council Science Advisory Committee, which group is formulating a science pattern for the Chicago fair. W. H. Eisenman, secretary of the A. S. S. T., is chairman of the section.

The building of the old stone furnace at Youngstown, it is noted in Mr. Garrett's historical summary, followed closely the first practical application in American practice of Neilson's hot blast theory. In the same year, 1835, the first successful use of coke was made in blast furnace practice.

Thus began, in Ohio, the development of an industry which was to play a dominant role in the progress of the United States. It is planned to trace this development through intermediate stages to the modern blast furnace plant, operating in model.

From the old stone furnaces, the remains of which can still be found in Ohio, the exhibit would pass to the first steel-encased blast furnace, built in 1854, and then to the revolutionary departure made in blast furnace construction when, at Duquesne in 1896, labor saving machinery on a large scale was introduced, resulting in tremendous economics and increased production of high quality pig iron.

INTERESTING INDUSTRIAL PUBLICATIONS

Ryan, Scully & Company, 3711 Wissahickon Ave., Philadelphia, has just published a sixteen page catalog on its line of automatic control equipment for the automatic control of air, gas or any liquid in connection with temperature and combustion control.

It contains illustrations and diagrams of control valves, control systems, special valves, and lay-outs. It will be sent upon request. Ask for Automatic Control Catalog No. 1K.

The Linde Air Products Co., 30 E. 42nd Street, New York, has published "Outline Training Course for Aircraft Welders" and "Production Welding." The former pamphlet outlines tests for airplane welders and gives instructions; the latter describes the oxyacetylene process as a production method in industry.

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A booklet describing the manufacture of calcium molybdate and its use in fine steel manufacture has been published by the Climax Molybdenum Company, 295 Madison Ave., New York. Copies may be obtained.

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A survey of the use and efficiency of Lavino Plastic K-N Chrome ore in the furnaces of the steel and tube works of the Timken Roller Bearing Co. has been made by an impartial investigator. Results of the survey may be obtained from the E. J. Lavino Co., Bullitt Bldg., Philadelphia.

The L. J. Wing Mfg. Co., 156 West 14th Street, New York, announces publication of a new edition of its booklet, "Improved Gas Producer Operation," which will be of interest to operating men in all plants using producer gas as a fuel. A copy will gladly be furnished to anyone interested.

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The North American Mfg. Co., 2910 E. 75th St., Cleveland, has issued a new bulletin illustrating miscellaneous gas burning equipment.

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The Automatic Temperature Control Co., Philadelphia, is distributing a new cover for its loose-leaf booklet "Automatic Control Equipment Data," and over 20 pages of new material.

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An interesting and attractive book discussing "Scientific Water Correction" may be obtained from the Dearborn Chemical Co., 310 So. Michigan Ave., Chicago.

TAYLOR-WHARTON BUILDING

New Foundry Building and Equipment Will Cost Approximately $300,000

The Taylor-Wharton Iron & Steel Co., Highbridge, N. J., has announced a major expansion of its foundry. The contract for the design and construction of the extension has been awarded to the Austin Co., engineers and builders. It will cost $300,000.

Plans call for new sand handling and conditioning equipment. The buildings required will be 80 by 20 feet and 130 by 50 feet.

A. S. & W. CO. RELEASES "TALKIE"

A twelve minute "talkie," picturing and discussing wire making, has been prepared by the American Steel and Wire Co. Incidental music and announcements provide the sound accompaniment.